

**Mapping of courses to employability / entrepreneurship / skill development for the year 2020-21**

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	Advanced Digital Signals and Systems	AEIE5101	Employability & Skill Development - Design digital FIR and IIR filters according to the given specification. Realize a digital filter structure from its transfer function. Understand theory of multirate DSP and adaptive filtering techniques, solve numerical problems. Understand theory of prediction, solution of normal equations and methods of spectral estimation.
2	Programming Language for Embedded IOT system	AEIE5102	Employability & Skill Development - Understand the key features, design challenges and related to IoT systems. Learn the architecture of NodeMCU and develop IoT systems using it. Demonstrate working knowledge of Micro Python. Design an IoT system with functional requirements for hardware components including processor, networking components and sensors. Develop an IoT system with along with applications of cloud.
3	Research Methodology and IPR	AEIE5103	Employability & Skill Development - Understand research problem formulation and its solution approaches. Analyze research related information. Learn how to write report and research proposal following research ethics. Judge importance of intellectual property and patent rights and learn the process of obtaining them.
4	Micro-Electronic Devices and Circuits	AEIE5131	Employability & Skill Development - Detail analysis Op-Amp circuits to understand loading effects in application circuits. Select MOS transistor as per datasheet parameters to design a simple current mirror. Analyze the DC performance of single-stage analog amplifiers containing these circuit elements. Compute terminal voltage and current characteristics for MOS transistors under a variety of conditions.
5	Medical Instrumentation	AEIE5132	Employability & Skill Development - Understand the physiology of biomedical systems and different methods in the design of biomedical instruments. Learn the different methods of medical imaging systems, concepts related to the operations and analysis of biomedical instruments. Apply it in the design of different assisting therapeutic and diagnostic medical devices.
6	Instrumentation and Industrial Automation	AEIE5133	Employability & Skill Development - Learn various process variable measuring instruments. Learn to read and draw the P&I diagrams. Apply the knowledge of various control methodologies in industrial automation. Learn industrial signal transmitter and safety in handling industrial instruments. Explain the process automation and architecture.
7	Mechatronics	AEIE5141	Employability & Skill Development - Integrate mechanical, electronics, control and computer engineering to model mechatronic systems. The complete design building, interfacing and actuation of a mechatronic system for a set of specifications. Learn different types of interface buses, communication networks, A/D conversions, DAS, data recording and logging etc required for mechatronic systems.
8	Advanced Digital Control Systems	AEIE5142	Employability & Skill Development - Principles for design of Digital Control system and will gain knowledge of implementing for industrial applications. Developing algorithms for applications based various digital controllers and analysis of discrete control systems using various time and frequency domain tools. Aware of advanced understanding of adaptive and self tuning principles and applications.
9	Advanced Optical Instrumentation	AEIE5143	Employability & Skill Development - Learn the techniques of communications using optical fiber. Learn the structures and performance of photo detectors (like photo diode, PIN diode, APD etc). Explain the techniques of measurement of distance, length, velocity, acceleration, current, voltage using laser. Acquire knowledge on basic principle of holography and its uses in different fields such as nondestructive testing, medical field etc.
10	Digital Signal Processing LAB	AEIE5151	Employability & Skill Development - MATLAB programs to determine time domain properties of the discrete time signals. Determine FFT and DFT of a discrete time signal. Design and implement FIR and IIR digital filters in MATLAB. Implement real time FIR and IIR digital filters and FFT algorithm using DSP kit like C6713 DSK.
11	Programming Language LAB	AEIE5152	Employability & Skill Development - Design and conduct experiments with input and output devices using a Node MCU. Perform programming with IIoT cloud service using low power microcontrollers and Raspberry Pi. Interface a sensor with Node MCU for IoT applications. Implement Android Things app using Java ME/Kotlin. Perform programming with MicroPython.
12	Embedded Systems	AEIE5201	Employability & Skill Development - Learn the architecture of AVR microcontrollers and develop embedded systems using it. Demonstrate working knowledge of embedded systems software with Linux and Python. Complete design of an embedded system with functional requirements for hardware and software components including processor, networking components and sensors, along with applications, subsystem interfaces and middleware.
13	Process Control System Design	AEIE5202	Employability & Skill Development - Process mathematical modeling and study the techniques of modeling. Understand the process dynamics in general and analyze it in few industrial applications. Design process control system applying different linear, non-linear and soft-computing techniques. Employ proper system identification technique to identify unknown system and acquire knowledge of computer control.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
14	Micro Sensor Science and Techonology	AEIE5231	Employability & Skill Development - Apply the concepts of IC fabrication in sensor as well as semiconductor technology. Understand the micromachining processes (Bulk/ Surface /LIGA) and fabrication steps viz. deposition (CVD, Stuttering/ epitaxy, ion implantation etc.), lithography, etching (dry/wet, RIE/ DRIE) of micro-sensors. Understand the packaging/ testing of microsensors along with signal conditioning circuitry in real time systems. Analyze the application of smart sensors in IoT and medical/ aro-space/telecommunication/ instrumentation fields.
15	Advanced Power Electronics	AEIE5232	Employability & Skill Development - DC Drive operations and implementations. Compare between performance of Voltage source and current source inverters. Differentiate among multi-level inverters. Analyze speed and position control methods of DC motors. Explain control of induction motors. Explain control mechanisms and models of HVDC and HVAC Transmission lines
16	Instrumental Methods of Analysis	AEIE5233	Employability & Skill Development - Different spectroscopic methods and understand their use. Identify different components of spectrometers and acquire knowledge about their functioning. State the fundamental properties of different types of chromatography and able explain their working principle and application. Give comprehensive idea about Electron microscopy.
17	Digital Image Processing	AEIE5241	Employability & Skill Development - Learn how images are formed, sampled, quantized and represented digitally and processed by discrete, linear, time-invariant systems. Apply transformation algorithms such as DFT, DCT, Discrete Sine, Walsh, Hadamard, Slant, Haar, KLT, SVD and Wavelet transform to any given image. Compress a given image by applying lossy and loss less image coding techniques. Perform image enhancement, restoration, morphological operation and segmentation of a given image. Analyze a given image by extracting features from it and by using object recognition techniques.
18	Statistical and Bio-signal Processing	AEIE5242	Employability & Skill Development - Case study-I: Application to biomedical signals: Analysis of continuous EEG signals, Single channel analysis; Multiple channel analysis: Mapping; Elimination of artifacts; sleep EEG analysis. Case study-II: Application to biomedical signals: Analysis of continuous ECG signals: Measurements, Processing of ECG, Artifact removal, Statistical methods and models for ECG; Heart rate variability: Time-domain methods of HRV analysis; Frequency-domain methods of HRV analysis.
19	Industrial Internet of Things	AEIE5243	Employability & Skill Development - Determine the IIoT architecture and application in various fields. Outline the concept of NB-IoT and LoRa. Realize the importance of security and privacy issues in IIoT. Interpret the concept of IIoT and M2M. Point out the applications of IIoT in various industries.
20	Embedded Systems LAB	AEIE5251	Employability & Skill Development - Perform programming with PORT, ADC and I2C bus registers in an AVR microcontroller. Interface a sensor with an AVR microcontroller and monitor its input by displaying the measured value in a PC. Implement USB communication between a Raspberry Pi and Arduino. Perform interfacing with GPIO of Raspberry Pi.
21	Process Control System Design Lab	AEIE5252	Employability & Skill Development - Understand the activity and importance of Boiler Drum in an industry. Calibrate and test the instruments. Simulate, tune and control different processes. Understand principle of modeling and control through experiments.
22	Term Paper and Seminar	AEIE5293	Employability & Skill Development - Understand of contemporary/emerging technology for various processes and systems. Learn how to write a technical document. Demonstrate the ability to deliver technical seminar. Interact effectively with audience to share knowledge and views.
23	Chemistry	CHEM1001	Employability & Skill Development - Development of New Material For Novel Application. Understanding the operating principles and reaction involved in batteries and fuel cells and their application. Knowledge of synthesizing Nanomaterials and their applications in industry, carbon nano tube technology is used in every industry now-a-days. Ability of synthesizing bio fuels as a renewable and environment friendly alternative source for natural fuel.
24	Chemistry Lab	CHEM1051	Employability & Skill Development - Able to determine the alkalinity, chloride ion present and total hardness and amount of calcium and magnesium in a given water sample. Able to develop titration skill. Chemistry teaches useful skills. Because it is a science, learning chemistry means learning how to be objective and how to reason and solve problems. Helps you to understand current events, including news about petroleum, product recalls, pollution, the environment and technological advances
25	Programming for Problem Solving	CSEN1001	Employability & Skill Development - It gives the basic knowledge of programming, teaches how to write loops, use pointers in C, in short teaches for the first time how to code in procedural programming language. It is basically the bread and butter of a computer science engineer.
26	Programming for Problem Solving Lab	CSEN1051	Employability & Skill Development - Teaches them the basics of programming from scratch using C. So this is the single most important subject who chooses a programmer's job in life, and the majority of the students choose to do so.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
27	Advanced Data Structures	CSEN5101	Employability & Skill Development - Teaches the advanced Data Structures such as skip list, quad tree, range tree, kd tree along with some basic data structures. For all the new-age companies that need a programmer to code up randomized algorithms and know super-fast search techniques, this is a must course.
28	Research Methodology and IPR	CSEN5102	Employability & Skill Development - Teaches the basic principles of research and ethical values that are required to carry forward a research. Also teaches how to protect intellectual property, the patent laws and their philosophy. These are very much required in any R&D based company.
29	Machine Learning	CSEN5131	Employability & Skill Development - This is an advanced course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc. Right now whole computation system is data driven and machine learning helps students to use it as a tool to provide data-driven services.
30	Advanced Wireless and Mobile Networks	CSEN5132	Employability & Skill Development - This advanced course helps the students to learn the working principles of mobile computation and wireless communication from scratch and also introduces the advanced topics like 4G, 5G networks and their associated security issues and their solutions. In this modern era of high mobile penetration, this is very much required by any mobile company.
31	Introduction to Intelligent Systems	CSEN5133	Employability & Skill Development - This is an one-level up course from the undergraduate AI course, where the students learn from scratch the various modern day tools like genetic algorithm, fuzzy logic, neural networks etc. These all are very much required in AI driven companies.
32	GPU Computing	CSEN5134	Employability & Skill Development - This course helps students to learn how computation power can be increased by introducing GPU in normal computing device. Today all AI, Machine learning or Bigdata based companies requires huge amount of computing power, a student learns how all these can be smoothly managed after learning this course.
33	Image Processing	CSEN5135	Employability & Skill Development - Any company working in computer vision (such as remote sensing, pattern matching) need students who have attended this advanced course.
34	Data Science	CSEN5141	Employability & Skill Development - This Course will help the students to know how to handle data, how to cure it, process it and also store it efficiently. All the concepts they will learn like Supervised, Un-supervised learning, Data Processing, Clustering, Classification are going to help them after they have studied this course in their work as Data Engineers.
35	Distributed Systems	CSEN5142	Employability & Skill Development - They get the knowledge and concept of distributive operating systems and their working principle, which is very much required in today's jobs requiring distributed implementation of the software.
36	Wireless Sensor Networks	CSEN5143	Employability & Skill Development - This is basic course that deals with how devices can communicate effectively and relentlessly without any noise and also their working principles. These all are very much required in this modern era of IOT devices.
37	Digital Forensics	CSEN5144	Employability & Skill Development - This course helps the students to deal with identifying all digital grievances and their management, which is very much required when every thing is digitalized.
38	Computational Biology	CSEN5145	Employability & Skill Development - Students get a knowledge how computation can be embedded in bio science. From DNA sequencing to pattern matching, evolutionary clustering all complex computations will help the students to get a job in pharmaceutical companies or biological research labs.
39	Machine Learning Lab	CSEN5181	Employability & Skill Development - It complements the theory course in Machine Learning and student learns various tools like tensorflow, azure and other python based tools to operate on various data-driven real life problems.
40	Advanced Wireless and Mobile Networks Lab	CSEN5182	Employability & Skill Development - Various tools like OTCL, Qualnet Network Simulator all complements the theory course and helps students to deal with many real time problems. These all help them in industry also.
41	Introduction to Intelligent Systems Lab	CSEN5183	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
42	GPU Computing Lab	CSEN5184	Employability & Skill Development - Students will be dealing with parallel programming using CUDA. It will help them in industries where huge amount of computations are required.
43	Image Processing Lab	CSEN5185	Employability & Skill Development - It complements the theory course in image processing and student learns various matlab and python based tools to do computations on various type of images, which is a must before joining any company in the computer vision or handling image processing projects.
44	Advanced Algorithms	CSEN5201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement implementing complex algorithms and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
45	Soft Computing	CSEN5202	Employability & Skill Development - Any project that requires to solve some NP-complete (hard) problems in real time, which are not solvable in polynomial time at all need such a course.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
46	Data Preprocessing and Analysis	CSEN5231	Employability & Skill Development - Any Data Science or Machine learning based project in the industry requires processed, structured data and this course actually helps the students to understand how to extract useful meaningful data from an unorganized unprocessed data.
47	Secure Software Design and Enterprise Computing	CSEN5232	Employability & Skill Development - This course helps the students to know the procedure to build secured software and also to deploy them in various platforms. This knowledge is pretty much required in every Software MNCs.
48	Computer Vision	CSEN5233	Employability & Skill Development - This course helps the students to learn from scratch like detecting edges to advanced levels like using KNN, ANN models to recognise video as well as images. All these features are very much desirable for Video and image processing industries.
49	Theory of Computation	CSEN5234	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course.
50	Computational Geometry	CSEN5235	Employability & Skill Development - This advanced topic deals with various geometric approximations as well as various range searching techniques, which are very much useful for not only in EDA based companies as well as required for any companies developing search engines.
51	Human and Computer Interaction	CSEN5241	Employability & Skill Development - This topic is very useful for those companies which focus on designing front-end GUI design. So this a must course for students who want to be placed in Software MNCs.
52	Graph Algorithms	CSEN5242	Employability & Skill Development - This course helps in a handful of companies that builds software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
53	Cloud Computing	CSEN5243	Employability & Skill Development - The days of proprietary infrastructure is fast receding and in practice more and more companies are becoming confident to keep their valued data on cloud. Under this scenario, many service-oriented companies also get huge projects that require a knowledge of cloud computing in the background and also have dedicated teams looking after cloud aspects. This course help our students to target those jobs.
54	Algorithms for VLSI CAD	CSEN5244	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques that are required to build a chip in a precise manner, which is done by a robotic arm and at the nano meter scale, so precision really matters. All these skills are very much required in a multi-national EDA company.
55	Spatial Informatics and GIS	CSEN5245	Employability & Skill Development - This course is very much required by students working in remote sensing and GIS companies for building MAPs to find natural resources.
56	Advanced Algorithms Lab	CSEN5251	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
57	Soft Computing Lab	CSEN5252	Employability & Skill Development - Students get a chance to do some projects, where various soft computing techniques like fuzzy logic, genetic algorithms and other evolutionary algorithms are learnt through real-life problems.
58	Term Paper and Seminar	CSEN5293	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry. It also gives an exposure to the latest research domains that they are going to explore in depth during their final year projects.
59	Disaster Management	DIMA5116	Employability & Skill Development - Demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives. Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations. Critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in.
60	Basic Electronics	ECEN1011	Employability & Skill Development - Principles of operation of semiconductors, ideas about the building blocks like diodes, transistors, FETs, OPAMPS, rectifier circuits, amplifier, distortion, biasing etc. Analysing various electronic circuits and devices. Design different application specific circuits associated with diodes operating both in forward and reverse bias. Analyze various biasing configurations of Bipolar Junction Transistor and categorize different biasing circuits based on stability. Design and implement various practical purpose electronic circuits and systems meant for both special purpose and general purpose and analyze their performance depending on the type of required output and subsequently the applied input.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
61	Basic Electronics Laboratory	ECEN1061	Employability & Skill Development - This course gives a hand on experience handling of devices, biasing properly, plotting graphs to understand behaviour of devices, handling of instruments to measure parameters.
62	Antenna and Radiating Systems	ECEN5101	Employability & Skill Development - Students will come to know about Antenna – Radiation, VSWR, aperture and their importance, Types of antennae and antenna arrays including microstrip antenna, Testing principles of antennae, EMI and EMC and associated hazards, Different propagation phenomena and QoS of radio links and their analysis which in turn will enhance their Employability.
63	Wireless and Mobile Communication	ECEN5102	Employability & Skill Development - The students will understand the challenges of wireless and mobile communication. They will be able to analyse the factors like fading, SNR. The students should be able to explain the working of a cellular system- both GSM and CDMA. They will be able to analyse performance of cellular and other wireless networks enhancing their employability in communication Industry and allied services
64	Research Methodology and IPR	ECEN5103	Employability & Skill Development - Students will be able to Understand research problem formulation. They will be able to analyze research related information, understand the ultimate importance of ideas, concept and creativity. they will also understand Importance of IPR for individuals and nations. Such knowledge definitely enhances skill development for research which is in alignment with Make in India concept.
65	Wireless Ad Hoc and Sensor Networks	ECEN5131	Employability & Skill Development - Students will be able to analyze a situation and interpret a data in ad hoc networks. Students will acquire knowledge to learn and apply modeling based approach through the extensive use of simulator tools. Students will be able to understand and develop ability to participate in research work. They will be able to apply suitable algorithm for a route. The students will understand the security requirements for networks enhancing employability of students.
66	Photonics and Optical Communication Networks	ECEN5132	Employability & Skill Development - Students will know about the different modes, devices, detectors, amplifiers using optical fiber communication. They will have knowledge about various types of systems with their strengths and weaknesses. The students will know about different types of optical networks. They will understand the requirements of repeaters and amplifiers and their parameters. The students will be able to choose type of fiber for typical applications. They will be able to integrate the fiber optics with other networks. Such knowledge will help them in getting placed in Communication industry.
67	Statistical Process in Communication	ECEN5133	Employability & Skill Development - Students will know about the different matrices and filters used in communication systems. They will have knowledge about modeling of signals. The students will know about techniques of detection. The students will be able to differentiate between filters. They will learn about signal properties and processes. The students will learn about stochastic models for possible application and hence help in skill development.
68	Satellite Communication and applications	ECEN5141	Employability & Skill Development - Students will know about the orbits and different modules of a satellite. They will have knowledge about satellite links and various factors affecting the QoS of the links. The students will be able to explain the differences between TDMA, FDMA, DAMA etc. access techniques. They will be able to explain VSAT. GPS. The students will be able to analyse causes of interference and solution. They will understand GPS working. Such knowledge leads to enhancement in employability.
69	Multimedia Communication	ECEN5142	Employability & Skill Development - Students will know about the different media classification, media characteristics. They will have knowledge about various types of compression coding and memory systems. The students will know about different architectures used and media modeling. They will learn about management of resources and project management. The students will be able to analyse synchronization problems. They will be producing films with confidence which indicates direct relation to employability
70	Cryptography and Network Security	ECEN5143	Employability & Skill Development - Students will know about the basics and different standards used. They will have knowledge about important cryptography techniques. The students will know about algorithms applied for encryption. They will acquire knowledge about security challenges and some concepts in web security. The students will understand security systems using VPN and Firewalls. They will be able to develop new algorithms. Such skill sets will enhance their employability in all the IT companys.
71	Antenna and Radiating Systems lab	ECEN5151	Employability & Skill Development - Students will know about the different experimental set-ups to measure various parameters related to antennae. They will study radiation pattern for antenna, will acquire practical knowledge about Smith chart and stub matching. The students will also learn to study spectral analysis of signals enhancing their employability.
72	Wireless and Mobile Communication lab	ECEN5152	Employability & Skill Development - The students will be able to correlate different theories of wireless communication and fiber optics with practical experiments. They will understand operations of repeater station, GPS and GSM cellular systems. They will learn the procedures for testing radio parameters. Students will learn working of fiber optic links. Such knowledge will enhance their employability in Communication Industry.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
73	Advanced Digital Communication Techniques	ECEN5201	Employability & Skill Development - Students will learn about the transmission techniques, synchronization in digital communication. They will know about the modulation schemes, OFDM etc. The students will acquire knowledge about the CDMA in details. The students will have clear idea about estimation and detection schemes. They will be able to design reliable channel codings. They will understand the differences between coding schemes. The students will be able to analyse the digital communication quality enhancing their employability in Communication Industry
74	Advanced DSP and applications	ECEN5202	Employability & Skill Development - Students will know about the different transforms applied in signal processing. They will have knowledge about LTI systems, Digital filters. The students will know about multi- rate processing, wavelet transforms. They will solve problems on FFT and DFT. The students will know about the comparison of filters. They will be able to apply the knowledge of wavelets in developing advance systems leading to start up opportunities and entrepreneurship
75	Telecommunication Systems and Engineering	ECEN5231	Employability & Skill Development - Students will know about the different telephone networks, ADSL etc. They will have knowledge about digital telephone systems and local area networks- features and parameters. The students will be aware of ISDN and its operation. They will be able to calculate the efficiency of a tel network. They will know about the various 802.11 standards and their applications. They will know about ATM operation and ATM networks leading to skill development for communication Industry.
76	Image Processing and Pattern Recognition	ECEN5232	Employability & Skill Development - Students will know about the basics of image processing, spatial filtering etc. They will have knowledge about techniques applied for pattern recognition. The students will know about image clustering and face recognition. They will be able to classify and predict. The students will acquire knowledge about identifying objects correctly. They will earn the potential to develop new applications which facilitates entrepreneurship and supports the concept of self reliant nation
77	Cognitive Radios and networks	ECEN5241	Employability & Skill Development - Students will develop an ability to analyze a performance in a radio net. They will develop an ability to learn and apply modular approach in design. They will Develop a passion to pursue next generation wireless communication. They will be able apply correct technique in locating radios in networks. This knowledge will help them in skill development for Communication Industry.
78	Microwave Measurement and Instrumentation	ECEN5242	Employability & Skill Development - Students will be able to analyse instruments like spectrum analyzer, Vector Network analyzer etc. They will be able to measure microwave power. They will acquire an Idea about techniques to measure power. They will develop the capability to analyse problem in measurement procedure. Such skill sets will enhance their employability in Rf Industry
79	Design of Communication Equipments and Systems	ECEN5243	Employability & Skill Development - Students will be able to apply knowledge in designing electronics for communication engineering. They will have the ability to learn and apply modelling based approach through the extensive use of simulation tools. They will be able to.Design of complex PCBs with Clear perception about testing of parameters. Consequently, they will be able to have their own start up supporting national vision of self reliant India.
80	Advanced DSP and applications lab	ECEN5252	Employability & Skill Development - The students will acquire understanding of sampling, convolution , Z-transform, DFT and FFT and their applications. They will be able to design Filters – IIR and FIR which in turn helps in developing skills for Communication Industry
81	Design and Simulation lab	ECEN5253	Employability & Skill Development - Students will be able to Design graphical user interfaced models of various communication systems/ subsystems with the help of suitable advanced software e.g. MATLAB/ OCTAVE/LABVIEW/ NS/ PUFF/ IE3D/ ANSOFT/ HFSS/ CST/ QUALNET/ MICROWAVE OFFICE etc. for detailed study of their operating principle and their performance vis-a-vis practical limitations like, channel bandwidth, noise, attenuation etc. Hence enhances their employability
82	Basic Electrical Engineering	ELEC1001	skill development in basic concept of DC and AC electric circuits Operate DC Machines and analyze Starters and speed control of DC motors. Analyze single and three phase AC circuits. Know the operation of single phase transformers and three phase induction motors.
83	Basic Electrical Engineering Lab	ELEC1051	Employability & Skill Development - Make electrical connections by wires of appropriate ratings. Understand the application of common electrical measuring instruments and the basic characteristics of different electrical machines. A student while working in any shop floor will face several electrical circuit/machines (both AC and DC). Hands on training or a preliminary idea about the working principle and the charateristics of such circuits/ machines will lead to an incresed productivity in the shop floor.
84	Communication forProfessionals	HMTS1011	Employability & Skill Development - It helps the students to write formal letters for business purposes as well as reports effectively in English, which is very much required in all possible multi-cultural, globalized work enviroments that they might face.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
85	Professional Communication Lab	HMTS1061	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Helps in Interpersonal communication. Communicate in an official and formal environment. Effectively communicate in a group and engage in relevant discussion. Engage in research and prepare presentations on selected topics. Understand the dynamics of multicultural circumstances at workplace and act accordingly. Organize content in an attempt to prepare official documents. Appreciate the use of language to create beautiful expressions.
86	Business English	HMTS1202	Employability & Skill Development - It helps the students to communicate effectively in english that helps in all possible job interviews they face. Helps in Interpersonal communication. Organizational Communication: Agenda & minutes of a meeting, notice, memo, circular, Project Proposal, Technical Report Writing, Organizing e-mail messages, E-mail etiquette, Tips for e-mail effectiveness and Levels or Channels of Communication.
87	Language Lab	HMTS1252	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Helps in Interpersonal communication. Learn Voice Modulation, Accent training. Conversational Skills/Spoken Skills Writing with a purpose---Convincing skill, argumentative skill/negotiating Skill (These skills will be repeated in oral skills). Writing reports/essays/articles logical organization of thoughts.
88	Constitution of India	INCO5117	Employability & Skill Development - Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective. To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.
89	Mathematics-I	MATH1101	Employability & Skill Development - The concepts Linear algebra that is given helps in all jobs that uses Machine Learning. Apart from that, the knowledge of Calculus helps all students who choose their career in the domain of Image Processing.
90	Mathematics II	MATH1201	Employability & Skill Development - The basics of Graph Theory that is introduced here is a must for all the engineers that get employed in any of the knowledge-based industries. Also a whole lot of students go for companies working in map-based algorithms like Mapline, Uber, OLA etc. for whom this is a must course. The basic probability and numerical methods are an introductory course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
91	Advanced Discrete Mathematics and Statistical Methods	MATH5101	Employability & Skill Development - This advanced topic deals with Number Theory, which introduces to the students what they ultimately need in a group/company working in Cryptography or Data Security. Also the other things that are taught like Logic, graph theory, probability statistics are very much essential for anybody working in the industry, whatever be the domain.
92	System Administration Using Linux	MCAP3150	Employability to work as system administrator in Linux environment.
93	Advanced Java	MCAP3151	Employability in the field of Advanced Java programming.
94	Image Processing	MCAP3152	Skill development by understanding the basic theory and algorithms and mathematical transforms necessary for image processing.
95	Advanced Java Lab	MCAP3156	Employability in the field of java programming and web development.
96	Image Processing Lab	MCAP3157	Skill development to conduct image enhancement techniques, image restoration procedures, image compression procedures.
97	Cryptography And Network Security	MCAP3160	Employability to design security applications in the field of Information technology.
98	Mobile Computing	MCAP3170	Skill development by understanding and analyzing the difference between Mobile Computing and Wireless Networking.
99	Soft Computing	MCAP3171	Skill development by understanding and analyzing soft computing concepts, technologies and their role in problem solving.
100	Compiler Design	MCAP3182	Skill development to understand the overall hierarchy of formal instructions from source code to machine code.
101	Ecommerce And Erp	MCAP3183	Entrepreneurship with understanding the Hardware and Software Technologies for E-commerce and payment systems.
102	Minor Project And Seminar	MCAP3195	Skill development through minor project and seminar.
103	Comprehensive Viva	MCAP3221	Skill development for comprehensive knowledge on Computer Applications.
104	Major Project And Seminar	MCAP3295	Skill development through major project and seminar.
105	WORKSHOP /MANUFACTURING PRACTICES	MECH1051	Employability & Skill Development - Hands on training on machining exposure (Lathe, shapping, milling, drilling etc) and manufacturing procedures (Casting, welding etc.) are helpful for direct bearing on employability.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
106	Engineering Graphics & Design	MECH1052	Employability & Skill Development - Engineering drawing is the essential language to the engineers and this course help the students to develop themselves as an designer which is very much essential for employability. Engineering Graphics enhances the employability in design/ construction/ interior designing field. Acquaintance with different drafting equipment & accessories; Gain the concept of scale of drawing. The concept and skill of different types of projections of engineering drawing is practiced. Learn engineering drawing software (CAD)
107	Personality Development through Life Enlightenment Skills	PDL5118	Employability & Skill Development - Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life. The person who has studied Geeta will lead the nation and mankind to peace and prosperity. Study of Neetishatakam will help in developing versatile personality of students.
108	Physics I	PHYS1001	Employability & Skill Development - Explain the working principle of LASER, and apply the knowledge in different lasing system and their engineering applications in holography. Imparting the essence and developing the knowledge of controlling distant object like satellite, data transfer through optical fiber, implication of laser technology, handling materials in terms of their electrical and magnetic properties etc.
109	Physics Lab I	PHYS1051	Employability & Skill Development - To gain practical knowledge by applying the experimental methods to correlate with the Physics theory. To learn the usage of electrical and optical systems for various measurements. Apply the analytical techniques and graphical analysis to the experimental data. Understand measurement technology, usage of new instruments and real time applications in engineering studies. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group.
110	Sanskrit for Technical Knowledge	SANS5120	Employability & Skill Development - Learning of Sanskrit to improve brain functioning. Learning of Sanskrit to develop the logic in mathematics, science & other subjects. Enhancing the memory power. The engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature.
111	Digital VLSI IC Design	VLSI5101	Employability & Skill Development - Students will learn CMOS Circuit Design, Layout Design, VLSI Design Methodology, HDL Coding, EDA Logic Synthesis and P & R flow which will enable their employability and skill development
112	Embedded Systems Design	VLSI5102	Employability & Skill Development - Students will learn Embedded System Design Methodology, Micro controller Design, Embedded Memory Architecture and I/O Configuration which will enhance their employability and skill development
113	DSP For VLSI System	VLSI5131	Employability & Skill Development - Students will learn DSP Algorithm, Signal and Data Flow Graph, Pipeline and Parallel Processing, SISO, MIMO System which will enable their employability and Skill Development
114	VLSI IC Fabrication	VLSI5132	Employability & Skill Development - Students will learn various fabrication steps and methods of basic and advanced Technology which will enhance their Skill development
115	CAD of Digital System	VLSI5141	Employability & Skill Development - Students will learn graph theory, data structures and algorithm needed for CAD automations, they will learn Physical Design Optimization on Partitioning and Floorplan, High level and Logic Level Synthesis and Verilog Modeling which will enhance their employability and skill development
116	Modelling of VLSI Device	VLSI5142	Employability & Skill Development - Students will learn BJT, MOSFET Modeling, Short Channel Effect, MOS Scaling and Industry Standard Compact Modeling which will enhance their employability and skill development
117	Digital VLSI IC Design Lab	VLSI5151	Employability & Skill Development - Students will do hands on practice on Industry Standard Cadence Virtuoso Schematic editor, Spectra Circuit Simulation, Layout Edit and Verifications, Pre Layout and Post Layout Simulation and Analysis which will enable their employability and skill development
118	Embedded Systems Design Lab	VLSI5152	Employability & Skill Development - Students will do hands on practice on Industry Standard Xilinx Vivado Simulator, VHDL coding and Simulation/Verification, Finite State Machine coding using HDL, Test Bench HDL coding for RTL Verification, FPGA synthesis, Place & Route and Hardware Programming, ARM Cortex based Software/Hardware which will enable their employability and skill development
119	Analog VLSI IC Design	VLSI5201	Employability & Skill Development - Students will learn MOS-based analog VLSI sub-circuits, relevant small-signal equivalent circuit models, they will learn basic concepts in RF design and the geometry, models of passive devices used in the RFIC, they will learn data converters, switched-capacitor circuits, operation of the oscillator circuits. All these learnings will enhance their employability and skill development
120	VLSI Design, Testing and Verification	VLSI5202	Employability & Skill Development - Students will learn embedded Memory Design in VLSI Chip, VLSI Interconnect Design, Industry Standard STA (Static Timing Analysis) Method, Set-up and hold Checks for Timing Verification, process variation and Clock skew concepts and Si Testing/Debug Methods which will enable their employability and skill development



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
121	Memory Technologies	VLSI5231	Employability & Skill Development - Students will learn SRAM Bit-cell Design, SRAM Array architecture and periphery Circuits, DRAM Bit cell Design, DRAM Array architecture, periphery Circuits and Controller, various ROM Design and Future Memory Technologies like MRAM, FRAM which will enable their employability and skill development
122	Low Power VLSI Design	VLSI5232	Employability & Skill Development - Students will learn CMOS Dynamic Power Dissipation & Reduction Techniques, CMOS Standby (leakage) Power Dissipation & Reduction Techniques, Short Circuit Power Reduction Techniques, Embedded Memory Power Reduction Techniques, System and Architecture level Power Reduction Techniques which will enable their employability and skill development
123	Advanced VLSI Processor	VLSI5241	Employability & Skill Development - Students will learn instruction set architecture (ISA), CISC and RISC Architecture, DSP Processor Architecture, Accelerator, Multi-Threaded Processor, Processor cores in SOC Design which will enhance their employability and skill development
124	Advanced Nano Devices	VLSI5242	Employability & Skill Development - Students will learn various leakage phenomena in advanced MOS, High K Plus Metal Gate Technology, SOI MOS device, FinFET Devices like DGMOS, Tri-gate, Hetero-Structures, CNT, Graphene Device which will enhance their employability and skill development.
125	Analog VLSI IC Design Lab	VLSI5251	Employability & Skill Development - Students will do hands on practice on Analog VLSI sub-circuits and amplifier circuits, layout for analog VLSI sub-circuits and circuits, special circuits namely data converters, practical switched-capacitor circuits which will enhance their employability and skill development
126	VLSI Design, Testing and Verification Lab	VLSI5252	Employability & Skill Development - Students will do hands on practice on Critical Path Modeling and Analysis, Sizing in Digital Design, CMOS Design of Combinational Circuits and Modules, CMOS Design of Sequential Circuit, Setup and Hold Check, Layout of a system, DRC, LVS, Extraction using Industry Standard Cadence Virtuoso/Assura, Back-annotation and Post Layout Timing Analysis using Industry standard Spectra Circuit Simulator which will enhance their employability and skill development.
127	Stress Management by Yoga	YOGA5119	Employability & Skill Development - Develop healthy mind in a healthy body thus improving social health. Improve efficiency.
128	Electrical and Electronic Measurements	AEIE2204	Employability & Skill Development - Choose appropriate bridge for measurement of resistance, capacitance and inductance. Select electronic voltmeters suitable for typical measurements and explain the construction of cathode ray tube, circuits of oscilloscope time base, CRO probes, dual trace oscilloscope and applications. Analyze the working of different types of digital voltmeters, digital frequency meter and digital display units. Determine the quality of a coil, capacitor using Q meter.
129	Analog Electronic Circuits	AEIE2101	Employability & Skill Development - Design and analyze BJT amplifiers for small and large signal. Design and compare between different types of Oscillators to meet the specified needs with appropriate consideration. Design, analyze and understand the application of different types of multivibrators with and without IC 555. Analyze and design analog electronic circuits using discrete components with specified needs for the betterment of human living.
130	Sensors and Transducers	AEIE2102	Employability & Skill Development - Measure various industrial variables such as temperature, pressure, level, flow etc. Understand the operational conditions, range and limitations of sensors and transducers. Understand the interfacing of the sensors with the electrical circuits in measuring and controlling devices. Use the sensors in IoT based applications.
131	Circuit Theory and Network Analysis	AEIE2103	Employability & Skill Development - Identify, formulate, and solve engineering problems in the area circuits and systems. Acquire skills in analyzing electrical measuring devices, analog electronic circuits, power electronic circuits. Analyze and synthesize RL, RC and RLC networks. Design an electric system, components or process to meet desired needs within realistic constraints.
132	Material Science and Technology	AEIE2111	Employability & Skill Development - Explain the properties and structure of engineering materials. Make use of phase diagrams to predict microstructures and also to understand precipitation hardening. Compare & Evaluate the processing of engineering materials. Choose the proper engineering material for defined field of applications with economic, environmental and societal considerations. Determine the importance of material properties in engineering design.
133	Analog Electronics Lab	AEIE2151	Employability & Skill Development - Set up testing strategies and select proper instruments. Design different kind of electronic circuits appropriately to obtain the best possible circuits that can be applied to any electronic systems. Practice different types of wiring and instruments connections keeping in mind technical, economical, safety issues. Evaluate the use of computer based analysis tools to review the performance of electronic circuit.
134	Sensors and Transducers Lab	AEIE2152	Employability & Skill Development - Experiment with temperature measuring sensors like AD590 IC sensor, RTD and thermistor. Performance study of capacitive transducer, LVDT, Pressure and displacement sensors. Rotational speed measurement using magnetic proximity sensor, stroboscopic principle. Performance studies of some optical sensors like LDR, photo diode and photo transistor. Design a suitable signal conditioning circuit for a given sensor.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
135	Circuits and Networks Lab	AEIE2153	Employability & Skill Development - Apply network theorems to analyze the experimental result using hardware circuits. Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
136	Digital Electronics	AEIE2201	Employability & Skill Development - Design and implement combinational logic circuits, sequential logic circuits. Describe the nomenclature and technology in the area of memory devices: ROM, RAM, PROM, PLD etc. and different kind of ADCs and DACs. Understand the basic electronics of logic circuits and be able to use integrated circuit packages.
137	Industrial Instrumentation	AEIE2202	Employability & Skill Development - Design different flow measuring devices and level measuring devices with necessary accessories for industry. Demonstrate working knowledge of temperature measuring devices. Design electronic instrumentation system for the acquisition of measurement data produced by measuring instruments for flow, level, temperature and pressure. Formulates industrial process parameters towards the analysis of process data
138	Control Systems	AEIE2204	Employability & Skill Development - Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
139	Microprocessors and Microcontroller	AEIE2205	Employability & Skill Development - This course helps to get jobs in companies that work in embedded systems.
140	Digital Electronics Lab	AEIE2251	Employability & Skill Development - Analyze and identify different components of digital electronic circuits. Design and implement combinational logic circuits, and sequential logic circuits. Develop necessary digital logic and apply it to solve real life problems keeping in mind technical, economical, safety issues.
141	Industrial Instrumentation Lab	AEIE2252	Employability & Skill Development - Demonstrate the calibration process of pressure measuring devices using dead weight taster. Measure process parameters like flow, level, temperature, pressure, moisture and viscosity using different industrial instruments.
142	Electrical and Electronic Measurements Lab	AEIE2253	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Able to make statistical analysis on large number of data. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
143	Control Systems Lab	AEIE2254	Employability & Skill Development - Control the speed of dc motor using different controllers. Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
144	Microprocessors & MicrocontrollerLab	AEIE2255	Employability & Skill Development - It gives the chance to work with actual microprocessors and microcontrollers, to program them for small projects that in turn helps to get jobs in companies that build small pieces of stand-alone or embedded systems with a microprocessor and/or a microcontroller in it.
145	Biosignal and Biomedical Image Processing	AEIE6121	Employability & Skill Development -
146	Intelligent Control	15	Employability & Skill Development - The students will be able to explain the concept of intelligent control and their applications. They will be able to gain knowledge about fuzzy set theory and control scheme based on it. They will be able to apply Genetic Algorithm to solve optimization problems in different control systems. They will be able to provide detailed theoretical and practical aspects of intelligent modeling, optimization and control of non-linear systems. They will be able to design Neural Network based predictor of nonlinear systems. Such endeavours enhances employability of students. As such employability of students enhances. Students will learn importance of process modeling, identification and analyze process dynamics, architecture of process control system like DCS and SCADA, adaptive control for effective process control, application of fuzzy logic, neural network and genetic algorithm in process control which will enhance their employability and skill development
147	Micro-Electromechanical System Design	AEIE6131	Employability & Skill Development - Design MEMS-based diaphragm type devices analytically. Fabricate the whole MEMS system with the help of simulation software. Develop micro-fluidic system for biomedical applications. Develop skill on engineering mechanics for micro-system design.
148	VLSI Technology	AEIE6132	Employability & Skill Development - Develop models of moderately sized CMOS circuits that realize specified digital functions. Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects. Learn VLSI design methodologies - the various steps and tools, the implementation choices, and good architecture practices.
149	Robotics Engineering	AEIE6133	Employability & Skill Development - Solve basic robotic dynamics, path planning and control problems. Model robot links and joints and integrate sensor technology and other external devices into the robot system to design multilink flexible robot.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
150	Remote Sensing	AEIE6134	Employability & Skill Development - Develop skills to address an environmental monitoring problem by selecting an appropriate remotely sensed data set and applying the relevant image analysis and interpretation techniques. Perform basic remote sensing image interpretation including spectral ratios, histogram stretching, filtering, supervised and unsupervised classification algorithms.
151	Dissertation Phase I	AEIE6195	Employability & Skill Development - Dissertation should be on any topic having relevance with Instrumentation, Electrical or inter-disciplinary field of engineering. Dissertation should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
152	Dissertation Phase II	AEIE6295	Employability & Skill Development - Manifest themselves in industrial and research ambiances by growing skills and confidence. Solve, analyze and execute technical projects in specified time frame. Develop ethical and social responsibilities by fulfilling the needs of society for betterment of life and engage themselves in life-long learning. Develop confidence for self-learning attitude for lifelong learning.
153	Comprehensive Viva-Voce	AEIE6297	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning.
154	Chemistry of Biomolecules	BIOT2101	Employability & Skill Development - skill development in spectroscopy, structural chemistry
155	Industrial Stoichiometry	BIOT2102	Employability & Skill Development - skill development in material and energy balance
156	Biochemistry	BIOT2103	Employability & Skill Development - skill development in analysis of biochemical pathways
157	Microbiology	BIOT2104	Employability & Skill Development - skill development in study of microbial life cycle and pathways
158	Biology	BIOT2105	Employability & Skill Development - Employability : to understand basic cell biology , biochemistry and cellular aspect of Life .
159	Biology	BIOT2105	Employability & Skill Development - Students can learn the basics of biology. They will be able to identify and take care of harmful activities and objects in engineering field.
160	Biomolecular Chemistry Lab	BIOT2151	skill development in spectrophotometry and estimation of basic biomolecules
161	Biochemistry Lab	BIOT2153	skill development in estimation of carbohydrates, proteins and fats
162	Microbiology Lab	BIOT2154	skill development in identification of bacteria, growing bacterial cultures
163	Thermodynamics & Kinetics	BIOT2201	skill development in kinetic mechanism of enzyme-substrate reactions
164	Transfer Operation-I	BIOT2202	skill development in transfer operations techniques
165	Industrial Microbiology & Enzyme Technology	BIOT2203	skill development in study of industrial enzymes
166	Molecular Biology	BIOT2204	skill development in DNA replication, transcription and translation
167	Transfer Operation-I Lab	BIOT2252	skill development in operation of flow measuring devices
168	Enzyme Technology & Fermentation Technology Lab	BIOT2253	skill development in Batch Fermentation and assay of Antibiotics
169	Molecular Biology Lab	BIOT2254	skill development in estimation and separation of DNA and RNA
170	Particle & Fluid Particle Processing	CHEN2101	Employability & Skill Development - Students will be able to apply the concepts of screen analysis to select suitable screening equipment and method for a given screening operation. Students will be able to select appropriate size-reduction equipment for a given comminution operation and will be able to calculate the power requirements for the operation.
171	Basics of Material & Energy Balance	CHEN2103	Employability & Skill Development - The students will learn to apply knowledge base to identify dimensionless numbers given several correlated variables. They can acquire ability to handle elementary flow-sheeting given a specific process. they can also develop skills to identify recycle, bypass and purge points in a chemical process and perform calculations with them.
172	Thermodynamics - I	CHEN2104	Employability & Skill Development - student can understand the process involving liquefaction, refrigeration and different power cycles. They can calculate thermodynamic efficiency of a process. It will help students to understand the working principle of airconditioning machine, refrigerator, internal combustion engine etc.
173	Fluid Mechanics (ChE) Laboratory	CHEN2151	Employability & Skill Development - The objective of this course is to impart working knowledge and develop skills of the students in fluid mechanics through bridging between the theoretical concepts and working practices for attaining the competency in practical applications or for working in the industry and conducting research & development activities.
174	Particle & Fluid Particle Processing Laboratory	CHEN2152	Employability & Skill Development - The objective of this course is to provide a hands-on idea on the mechanical devices that are essential in handling the material and it's processing in different chemical engineering related downstream applications.
175	Instrumental Methods of Analysis Laboratory	CHEN2153	Employability & Skill Development - Students will learn to handle advanced analytical instruments like UV-vis spectrophotometer, GC, HPLC, FTIR etc.
176	Heat Transfer	CHEN2201	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes.
177	Thermodynamics II	CHEN2203	Employability & Skill Development - It helps the student to understand multiphase multicomponent thermodynamic equilibrium which is required to design any process equipment for separation process like distillation, absorption, extraction, adsorption etc. Student will also learn chemical reaction equilibrium for the design a chemical reactor.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
178	Material Science	CHEN2204	Employability & Skill Development - The objective of this course is to impart basic knowledge and provide strong foundation to the learners on the processing, structural aspects, properties and functional applications of traditional and advance materials of the modern day.
179	Heat Transfer Laboratory	CHEN2251	Employability & Skill Development - The objective of this course is to provide the practical exposure to the students regarding the application of various heat transfer phenomenon and correlations in various engineering processes. Hands on experience will enable them to analyze working principles of various heat transfer devices including heat exchangers, condensers.
180	Programming Basics for Numerical Computation	CHEN2252	Employability & Skill Development - The objective of this course is to build up the basic knowledge on the programming skill with MATLAB/OCTAVE in order to solve mathematical model relating any chemical engineering process.
181	Engineering Drawing Laboratory	CHEN2253	Employability & Skill Development - The objective of the course is to provide an elaborated concept of engineering drawing and idea on the relevant software for engineering drawing. Student can learn to use AutoCAD software for developing engineering drawing layouts and can prepare a virtual 3-D representation of an engineering equipment.
182	Fundamentals of Strength of Materials	CIVL2101	Employability: Learn the fundamental tools and concepts involving mechanics to analyse and design structures. Forms the basic foundation in order to successfully learn the advanced structural engineering subjects.
183	Soil Mechanics-I	CIVL2102	Employability: To study the physical and mechanical properties of soil and to apply the knowledge for the solution of practical engineering problems.
184	Construction Materials and Technology	CIVL2103	Employability: To assess the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates, concrete, steel, etc
185	Fluid Mechanics	CIVL2113	Employability: To learn fundamental concepts of fluid mechanics and apply the, in irrigation and water resource engineering
186	Strength of Materials Lab	CIVL2151	Employability: Apply the concepts derived from various experiments conducted to determine the various properties of metals at industrial site.
187	Soil Mechanics Lab-I	CIVL2152	Employability: To visually identify different types of soil and to determine soil properties.
188	Construction Materials Lab	CIVL2153	Employability: To test the basic properties of the ingredients of concrete, fresh and hardened concrete properties.
189	Building Planning and Drawing	CIVL2154	Employability: To study various aspects of engineering drawing like plan, elevation, section and apply them in them in the respective field work
190	Fluid Mechanics Lab	CIVL2163	Employability: Understand the behaviour of fluid in various conditions using various experimental setups.
191	Structural Analysis-I	CIVL2201	Employability: To assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
192	Soil Mechanics-II	CIVL2202	Employability: To analyze the stability of retaining walls, slopes and to determine the bearing capacity and settlement of shallow foundation.
193	Surveying	CIVL2203	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
194	Highway and Traffic Engineering	CIVL2204	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
195	Soil Mechanics Lab-II	CIVL2251	Employability: To determine the consolidation and shear strength parameters of soil.
196	Surveying Lab	CIVL2252	Employability: The objective of surveying laboratory is to make student familiar and competent enough to draw map in suitable scale by using different surveying instruments like total station, theodolite, auto level, global positioning system (GPS), geographical information system (GIS), electromagnetic distance measurement (EDM).
197	Highway Engineering Lab	CIVL2253	Employability: The objective of Transportation Engineering laboratory is to determine some of the properties of coarse aggregates and bitumen.
198	Quantity Survey, Specification and Valuation	CIVL2254	Employability: Estimate the complete cost involved in the total planning, execution and construction of any project work. Extremely useful subject in respect to practical civil engineering is concerned.
199	Data Structure and Basic Algorithms	CSEN2004	Employability & Skill Development - Learn about the data structures/ methods/ algorithms mentioned in the course with a comparative perspective so as to make use of the most appropriate data structure/method/algorithm in a program to enhance the efficiency (i.e. reduce the running time) or for better memory utilization, based on the priority of the implementation. Development of an efficient program based on some algorithm will develop skill.
200	Data Structure and Basic Algorithms Laboratory	CSEN2054	Employability & Skill Development - Learning to analyze run-time execution of sorting methods, implementing any ADT using both array based and linked-list based data structures, designing advance data structure using Non-Linear data structure and finding appropriate data structures as applied to specified problem definition will enhance employability & develop skills.
201	Data Structures and Algorithms	CSEN2101	Employability & Skill Development - Teaches the basics of Data Structure and also a few concepts of algorithms. For all the new-age companies that need a programmer to code new algorithms for them, this is a must course.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
202	Discrete Mathematics	CSEN2102	Employability & Skill Development - The portion that deals with Number Theory introduces to the students for the first time what they ultimately use in a group/company working Cryptography or Data Security. Also the other things that are taught like Logic is essential for anybody working in the industry, whatever be the domain.
203	Data Structures and Algorithms Lab	CSEN2151	Employability & Skill Development - This reinforces the knowledge of the Data Structure with an hands-on experience to boost the confidence of the students.
204	Software Tools Lab	CSEN2152	Employability & Skill Development - This is a course that can be rarely found in a typical CSE curriculum. It teaches the things that we typically use in the organizations that do serious software development like Makefile, purify, purecov, codecov etc. That how to write correct code and optimize the same. This course single-handedly differentiates our graduates from the computing departments of other schools.
205	Design & Analysis of Algorithms	CSEN2201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
206	Computer Organization and Architecture	CSEN2202	Employability & Skill Development - This gives the basic idea how a computer works and also. Not only it is a requirement for those who work in hardware but also the Software Engineers need it as it teaches the principles based on which a computer can be used efficiently.
207	Operating Systems	CSEN2203	Employability & Skill Development - Anybody working at the system level in the industry need this course. Also those who work the application layer also need to have a solid idea how the operating system operates at the backend in order make the implementation efficient.
208	Design & Analysis of Algorithms Lab	CSEN2251	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
209	Computer Architecture Lab	CSEN2252	Employability & Skill Development - This course complements the Architecture theory course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
210	Operating Systems Lab	CSEN2253	Employability & Skill Development - A must course for students who look for jobs as a system administrator and or developers that need system level knowledge.
211	Business Analytics	CSEN6121	Employability & Skill Development - The course will guide students to analyze the business of any company and their future prospects. Students will demonstrate knowledge of data analytics. They will be able to understand and critically apply the concepts and methods of business analytics. Students will be able to demonstrate the ability to use various techniques to support data driven business decision making. Student will be able to demonstrate how to recognize trends, detect outliers, summarize data sets and analyze relationships between variables. They will be able to develop and test hypotheses. They will be able to initiate interest to learn various tools used in this area on his/her own. Such knowledge helps in skill development for entrepreneurship.
212	Advanced Artificial Intelligence	CSEN6122	Employability & Skill Development -
213	Mobile Applications and Services	CSEN6131	Employability & Skill Development - In this era of mobile, building various apps and their deployment is pretty useful stuff to learn for the students who seek jobs in developing reliable efficient mobile apps.
214	Compiler for HPC	CSEN6132	Employability & Skill Development - High performance computing is a basic need in this era of data-driven computations and so compilers to deal with high performance computing are in demand, and this course gives students that knowledge.
215	Fault Tolerant Computing	CSEN6134	Employability & Skill Development - This knowledge of this course is required to build a reliable real time system. As a result it is very much required in the industry that rely mostly on reliability of their services.
216	Approximation Algorithms	CSEN6135	Employability & Skill Development - This course helps in a handful of companies that builds software dealing with NP complete (hard) problems, which are hard to solve in real time. Hence they need to find some approximate solutions with provable bounds. There are companies that work on map-analytics, network congestion, traffic flow modeling etc.
217	Randomized Algorithms	CSEN6136	Employability & Skill Development - Again This course helps in a handful of companies that builds software based on randomized processing in order to ensure that the performance does not degrade for any particular distribution of inputs, this subject provides students that knowledge.
218	Information Retrieval	CSEN6137	Employability & Skill Development - The course is helpful for the students who seek their job in information backup and recovery industry.
219	Social Network Analysis	CSEN6138	Employability & Skill Development - The course is helpful for the students who seek their job in companies where recommendation, finding influencer, network clusters are really important for their business. Facebook, Netflix are some of these companies and this subject helps students to gather an in depth knowledge of their working principle.
220	Dissertation – Phase I	CSEN6195	Employability & Skill Development - It helps the students to write a proper technical documentation or manual on their work, which is very much required when they join a company. Most importantly they learn how to do research on a new topic on his own albeit with some guidance from his mentor. Those who go for higher studies get immensely benefitted from such an experience.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
221	Dissertation – Phase II	CSEN6295	Employability & Skill Development - It is the continuation of their earlier work, which helps them in the same way.
222	Analog Circuits	ECEN2101	Employability & Skill Development - Understanding the concepts of electronic ckt operations, designing different types of oscillators and high gain amplifier ckt will enhance employability & develop skills.
223	Circuit and Network Theory	ECEN2102	Employability & Skill Development - Understanding and analysing complex electrical circuits and applying mathematical tool to solve various network behaviour will enhance employability & develop skills.
224	Signals and Systems	ECEN2103	Employability & Skill Development - Understanding how to categorize and identify the different types of signals and systems, analyzing the frequency domain characteristics of signals using mathematical tools, implementing and extending the concepts of transformation tools to design of communication systems and filters will enhance employability & develop skills.
225	Digital Logic	ECEN2104	Employability & Skill Development - Anybody joining the EDA industry or the semiconductor industry at large needs this course as a must.
226	Analog Circuits Laboratory	ECEN2151	Employability & Skill Development - Designing different electronic circuits and measuring circuit parameters will develop skill.
227	Circuit and Network Theory Laboratory	ECEN2152	Employability & Skill Development - Obtaining the ability to apply MATLAB/OCTAVE for circuit analysis, analyzing two port network and designing different circuits will develop skill.
228	Signals and Systems Laboratory	ECEN2153	Employability & Skill Development - Learning signal synthesis using SA ,understanding signal operations and measuring filter responses will develop skill.
229	Digital Logic Lab	ECEN2154	Employability & Skill Development - Hands on experience that helps very much in the Electronic Design Automation (EDA) industry
230	Analog Communication	ECEN2201	Employability & Skill Development - Knowledge of Modulation, time and frequency domain representations of signal, analysis of various multiplexing techniques and radio receivers will develop skill.
231	Digital Systems Design	ECEN2202	Employability & Skill Development - Design of Combinational circuits, registers and Counters, different types of A/D and D/A conversion techniques. the concept of Flip flops to analyze different memory systems will develop skill
232	EM Theory & Transmission Lines	ECEN2203	Employability & Skill Development - Understanding of Electromagnetic wave propagation, different electromagnetic phenomena , design of Impedance Matching Networks for two wire Transmission Lines, analysis of the radiation characteristics of antenna configurations will increase the employability & develop skills
233	Electronic Devices	ECEN2204	Employability & Skill Development - Understanding of operations of solid state devices using relative position of Fermi energy levels across p-n junctions in devices, concepts of different hetero junctions in semiconductor devices will enhance skill.
234	Analog Communication Laboratory	ECEN2251	Employability & Skill Development - Hands on experience in design of modulators & demodulators, measurement of Radio receiver parameters will develop skill.
235	Digital Systems Design Laboratory	ECEN2252	Employability & Skill Development - Realization of Combinational circuits, Counters, multiplexers will develop skill
236	EM Theory & Transmission Lines Laboratory	ECEN2253	Employability & Skill Development - study on radiation patterns of various types of antenna, SW pattern under different conditions will increase the employability & develop skills
237	Design of Embedded Systems	ECEN6122	Employability & Skill Development - This advanced course helps students to learn the real-time working principles of embedded systems, how they communicate and process among themselves in real-time, which is very much required in this modern era of IOT.
238	Design and Technology for Photonic Integrated Circuit	ECEN6125	Employability & Skill Development - Students will be able to solve problems associated with wave propagation through anisotropic mediums. Students will be able to design different components such as planar and rectangular waveguides, bends, Y- section, couplers, filters etc. Students will be able to design coupled waveguides and resonators. Students will be able to design photonic band-gap devices. Students will understand the fabrication process for different optical devices. Students will be able to characterize the basic photonic components using simple python coding. Such knowledge ensures higher employability probability. Students will learn wave propagation through anisotropic mediums, planar and rectangular waveguides, bends, Y- section, couplers, filters, waveguides and resonators, photonic band-gap devices, fabrication process for different optical devices which will enhance their employability and skill development
239	Remote Sensing and applications	ECEN6131	Employability & Skill Development - The students will be able to apply previously gathered knowledge on Electromagnetic Theory and Microwave Engineering to appreciate this subject. They will be able to understand the basics of remote sensing principles and technologies and various remote sensing systems. They will Acquire knowledge about the various remote sensing techniques for applications in improving social, economic and environmental conditions for agricultural, forestry and water body management. They will be able to list various Remote Sensing missions worldwide. They will be able to analyze the operation of various remote sensing devices. They will be able to categorize the role of the Indian remote sensing program to explore possibilities in further studies and research. Consequently, enhance in employability is ensured.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
240	Internet of Things (IoT) and applications	ECEN6132	Employability & Skill Development - The students will acquire the Understanding of different protocols. They will be able to analyze IoT architecture. They will be able to design applications based on IoT. They will be able to create sensor based applications. Which is alignment with Make in india facilitating both Entrepreneurship and Employability.
241	MIMO Systems	ECEN6133	Employability & Skill Development - The students will be able to explain the behavior of wireless communication. They will be able to compare different channel models and MIMO channel model. They will be able to calculate the capacity of MIMO communication systems. They will be able to explain the diversity performance of MIMO channels. They will be able to understand different coding schemes. They will be able to Design systems with multi-user MIMO communications. Such knowledge ensures higher employability probability.
242	Circuit Theory	ELEC2101	Employability and Skill development in electrical technology by Imparting basic knowledge of electrical quantities such as current, voltage, power, energy and frequency to understand the impact of technology in a global and societal context. Identify, formulate, and solve engineering problems in the area circuits and systems, solve electrical circuits having both dependent and independent sources, analyze magnetically coupled circuits, use Laplace transform technique in solving electrical circuits. Design, analyze and synthesize filters.
243	Analog & Digital Electronics	ELEC2102	Skill development / Entrepreneurship- Design and analyze Electronic circuits to meet the specified needs with appropriate consideration. Design and analyze various sequential circuits like synchronous and asynchronous counters, shift registers using flip flops. Entrepreneurship for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools
244	Electrical & Electronic Measurement	ELEC2103	Employability and Skill development in the field of measuring instruments (PMMC, MI & ED). Choose appropriate bridge for measurement of resistance, capacitance and inductance. acquire knowledge about various electronic and digital instruments like average reading AC voltmeters, peak reading AC voltmeters, true RMS voltmeter, electronic multi-meter, digital voltmeters.
245	Circuit Theory Lab	ELEC2151	Skill development in electrical engineering by acquainting the basic concepts and properties of electrical circuits. Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
246	Analog & Digital Electronics Lab	ELEC2152	Skill development for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools.
247	Electrical & Electronic Measurement Lab	ELEC2153	Skill development for measuring electrical parameters in efficient ways.
248	Electrical Machines - I	ELEC2201	Employability and Skill development on- Study of various operations of DC machines and Transformers
249	Signals & Systems	ELEC2202	Employability and Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
250	Basic Thermal Power Engineering	ELEC2203	Skill development in thermal power engineering. Acquiring knowledge about basic Concepts of thermodynamics, understanding the application of first and second law of thermodynamics, understanding the basics of thermal power generation and calculate the efficiencies of Rankine cycles with reheat and regeneration, acquiring knowledge of various types of boilers, turbines used in thermal power plants provides employability.
251	Field Theory	ELEC2204	Skill development in electric field calculation, magnetic field calculation and propagation of electromagnetic wave through different medium
252	Electrical Machines - I Lab	ELEC2251	Employability/Entrepreneurship on various testing of DC machines and Transformer
253	Signals & Systems Lab	ELEC2252	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
254	Basic Thermal Power Engineering Lab	ELEC2253	Employability & Skill Development - Thermal power engineering knowledge provides Employability
255	Environmental Sciences	EVSC2016	Employability & Skill Development - Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems. Educate engineers who can work in a multi-disciplinary environment to anticipate and address evolving challenges of the 21st century. Understand and implement scientific research strategies, including collection, management, evaluation, and interpretation of environmental data. Design and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
256	Human Values and Professional Ethics	HMTS2001	Employability & Skill Development - Gathering knowledge to apply ethical theories in the decision making process , following the ethical code of conduct as formulated by institutions and organizations, implementing the principles governing work ethics, developing strategies to implement the principles of sustainable model of development and implementing ecological ethics wherever relevant will develop skill and enhance employability.
257	Fundamentals of Data Structure & Algorithms	INFO2101	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real life problem which helps in employability.
258	Information Theory & Coding	INFO2111	Employability & Skill Development - Attain the knowledge of information theory and direct applications of it over various real life problem.
259	Fundamentals of Data structure & Algorithms Lab/ Data Structures Laboratory	INFO2151	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real time problem which helps in employability.
260	Algebraic Structures	INFO2201	Employability & Skill Development - Gain Knowledge in checking syntax,testing automation and natural language processing which helps in Employability.
261	Object Oriented Programming	INFO2202	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
262	Computer Organization and Architecture	INFO2203	Employability & Skill Development - Gain knowledge in internal working, structure and implementation of a computer system.
263	Database Management Systems	INFO2204	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
264	Object Oriented Programming Lab	INFO2252	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
265	Computer Organization & Architecture Lab	INFO2253	Employability & Skill Development - Aquired skill to simulate,synthesis and testing of digital circuits which helps in employability.
266	Database Management Systems Lab	INFO2254	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
267	Mathematical Methods	MATH2001	Employability & Skill Development - Develop computational understanding of second order differential equations with analytic coefficients along with Bessel and Legendre differential equations with their corresponding recurrence relations. Master how partial differentials equations can serve as models for physical processes such as vibrations, heat transfer etc.
268	Probability and Statistical Methods	MATH2111	Employability & Skill Development - This is a must course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
269	Advanced Numerical Methods	MATH2202	Employability & Skill Development - Analyzing certain algorithms, numerical techniques and iterative methods that are used for solving system of linear equations, implementing appropriate numerical methods for solving advanced engineering problems , applying the knowledge of matrices for reducing problems involving Science and Engineering, developing an understanding to reduce a matrix to its constituent parts in order to make certain subsequent calculations simpler and applying various optimization methods for solving realistic engineering problems will enhance skill.
270	Advanced Numerical Methods Laboratory	MATH2253	Employability & Skill Development - knowledge of C programming to find non-iterative exact solutions of a system of equations, ability of C programming to solve problems involving interpolation, implementation of algorithms in optimization problems will enhance skill
271	Optimization Techniques	MATH6121	Employability & Skill Development - Students will be able to describe the way of writing mathematical model for real-world optimization problems. They will be able to Identify Linear Programming Problems and their solution techniques. They will be able to categorize Transportation and Assignment problems Students will be able to apply the way in which Game Theoretic Models can be useful to a variety of real-world scenarios in economics and in other areas. They will be able to convert practical situations into non-linear programming problems. They will be able to solve unconstrained and constrained programming problems using analytical techniques. Hence the knowledge acquired through this course helps in developing skill sets for better employability
272	Introduction To Programming	MCAP1101	Skill for applying high-level language to implement different solutions for the same problem and analyze why one solution is better than the other.
273	Mathematical Foundations	MCAP1102	Skill for understanding foundation of mathematics.
274	Numerical Analysis	MCAP1103	Skill development to understand the basics of numerical techniques.
275	Programming Lab	MCAP1111	Skill for writing simple programs relating to arithmetic and logical problems.
276	Computer Organization And Architecture	MCAP1201	Skill development to understand the basic computer organization and architecture.
277	Data Structures	MCAP1202	Skill development to apply different types of data structures in algorithms.
278	Database Management System I	MCAP1203	Employability in the field of database management systems and Relational database.
279	Information System Analysis Design And Implementation	MCAP1204	Entrepreneurship to analyze the feasibility of project.
280	Probability And Statistical Computing	MCAP1205	Skill development for the probability and statistical computing.
281	Digital Logic And Computer Architecture Lab	MCAP1211	Skill development for construct different combinational circuits like Adder, Subtractor, Multiplexer, De-Multiplexer, Decoder, Encoder,etc.
282	Data Structure Lab	MCAP1212	Skill development for knowing how to create an application specific data structures.



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
283	Dbms I Lab	MCAP1213	Employability for Apply the RDMS conceptsto create various schema and instances in terms tables.
284	ENGINEERING MECHANICS	MECH2101	Employability & Skill Development - Basic concepts of Engineering Mechanics directly and indirectly help the design process in the industrial products and in personal life.
285	FLUID MECHANICS & HYDRAULICS	MECH2102	Employability & Skill Development - The fundamentals of Fluid Mechanics including Fluid Statics and Fluid Dynamics are introduced through this subject. Students will be able to apply various fundamental relationships of Fluid Mechanics to analyse various system such as piping network having losses, pipe bends etc.
286	Mechanics for Engineers	MECH2106	Skill development to draw free body diagram of a system under equilibrium along with the consideration of frictional forces, engineering design calculations and able to analyze dynamic systems.
287	MACHINE DRAWING-I	MECH2156	Employability & Skill Development - Basic concepts of Sketching,Editing, Modifying & Drafting tools of AutoCAD software are introduced and applied for Conversion(multi view to isometric & Isometric to multi-view), sectional view of solids & 2-D Assembly of part drawings along with dimensioning and convensions used. Students will be able to apply the concepts to read & drawing Assembly Drawings & Production Drawings prevalent in industry.
288	WORKSHOP PRACTICE II	MECH2157	Employability & Skill Development - Hands on training in detailed on machining exposure (Lathe, shapping, milling, drilling etc) and manufacrng procedures (Casting, welding etc.) are helpful for direct bearing on employability.
289	Strength of Materials	MECH2201	Employability & Skill Development - Fundamentals of Mechanics of Materials by studying the deformed behavior of structures (bar, beam, column) under various loading (axial, torsional, bending or combination of them) and boundary (statically determinate & indeterminate) conditions are introduced in this subject. Students will be able to apply the knowledge to analyse, select suitable material and calculate & predict stresses and deformations to a problem at hand and be a part of RnD team of a research institute or company.
290	FLUID MACHINERY	MECH2202	Employability & Skill Development - Students will be able to classify and describe different hydraulic machines, their components, functions, performace curves and use those parameters for selection of a device in practical industrial application.
291	ENGINEERING THERMODYNAMICS	MECH2203	Employability & Skill Development - This is a conceptual subject and the knowledge on ths can be applied in various industrial as well as research field.
292	MANUFACTURING PROCESSES	MECH2204	Employability & Skill Development - Manufacturing knowledge makes students better engineers. Students need to not only design a solution, but make sure that their design can be mass produced in a cost effective way, with high quality.
293	KINEMATICS OF MACHINES	MECH2205	Employability & Skill Development - Kinematic design and analysis is one of the important step in designing a mechanical machine. Students will be able to select and kinematically synthesize different mechanisms, do velocity and acceleration analysis, select and design different transmission systems, cam design for specific application.
294	Mechanical Measurement and Instrumentation	MECH2211	Employability & Skill Development - Students learn various techniques of measurement of dimensions,, tolerances, surfacce finish, temperature, pressure, strain, stress etc and the instruments associated with such measurements. This is a vital skill in any manufacturing industry.
295	APPLIED MECHANICS LAB	MECH2251	Employability & Skill Development - The knowledge and experiences of this lab will help students to determine different material properties (mechanical) through standard testing equipments and testing processes.
296	FLUID MECHANICS & HYDRAULIC MACHINES LAB	MECH2252	Employability & Skill Development - Students will be able to evaluate coefficient of discharge for flow measuring devices and overall efficiencies of various turbines and pumps, validate Bernoulli's equation, calculate flow velocity and friction factor, etc. All of the above mentioned set-ups have practical applications in hydel power plants, pumping industries and also in any piping network.
297	Machine Drawing-II	MECH2256	Employability & Skill Development - Basic Sketching, Options aiding construction, Modelling, Editing, Modifying, Dimensioning tools & features of a solid modelling CAD software (CREO Parametic) are introduced through this Lab course. The knowledge help students to develop an insight about industrial design practice of various machine components which inturn help students take part actively in product developement and/or modifications in any company
298	Mechanical Measurement and Instrumentation Lab	MECH2261	Employability & Skill Development - Students handle and learn to use very precision instruments to measure various parametrs of mechanical components, This skill will help them excel in Quality Control activity in any industry specially the precision ones.
299	Personality Development through Life Enlightenment Skills	PDLS5118	Employability & Skill Development - It helps the students to motivate mentally and physisically. It will also develop skill to handle personal and professional in better way for a succesful career prospect.
300	Physics – II	PHYS2101	Employability & Skill Development - Here the students learn the fundamentals of fluid mechanics, mechanical vibrations and many other mechanical phenomenon. This will enable students to solve engineering problems more effectively in their profession.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
301	Physics (EE)-II	PHYS2211	Employability & Skill Development - Study of Physics-II provides employability.
302	Renewable Energy Resource and Characteristics	REEN5101	Employability & Skill Development - Student will learn different resources of renewable energy and how to extract energy economically to address global energy crisis
303	Research Methodology and IPR	REEN5103	Employability & Skill Development - The students will be able to carry out research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits. The students will be able to understand that when IPR would take such important place in growth. of individuals & nation and its protection would provide an incentive to inventors for further <u>Research and Development</u> .
304	Material for Renewable Energy Application	REEN5141	Employability & Skill Development - Student will learn about the manufacturing process of nano-material and its characterizations techniques. They can design photovoltaic material and its electronic properties for the solar energy application and understand the role of selection for the wind turbine material and its required <u>properties</u> .
305	Modeling and Analysis of Renewable Energy System	REEN5145	Employability & Skill Development - It help student to mathematically model multivariable physical system related to renewable energy generation. They will also be able to apply appropriate optimization methods to determine the optimal scheduling of power generation and also will be able to find out the most economic load dispatch scheduling for power generating units.
306	Measurement Analysis Laboratory	REEN5151	Employability & Skill Development - Student can learn to handle advanced analytical instruments for the characterization and analysis of solid, liquid and gaseous fuel.
307	Solar Energy Engineering	REEN5201	Employability & Skill Development - Students will be able to explain the basics of solar PV cells and relevant parameters for its characterization. They will be able to explain the important features of first to third generation solar cell technology. They can also learn to design solar thermal collector
308	Technology of Renewable Power Generation	REEN5202	Employability & Skill Development - Students will be able to get in-depth understanding of design parameters to help design and simulate the performance of a solar PV power plant. Students will be able to update themselves with the latest trends in wind turbine technology. Students will be able to understand of power systems, their operation and control focused on the issues related to the integration of distributed renewable generation into the network.
309	Hydrogen and Fuel Cell Technology	REEN5241	Employability & Skill Development - The objective of the course is to provide comprehensive and logical knowledge of hydrogen production, storage, and utilization. Student can also learn to design and manufacture fuel cell utilizing state-of-the-art technology.
310	Industrial Energy Analysis	REEN5243	Employability & Skill Development - Student will learn the methods of <u>professional energy audit of an industry</u> .
311	Solar Photovoltaic System Design	REEN5244	Employability & Skill Development - Students will learn to design grid connected and standalone solar systems. They can also learn about engineering material used for commercial renewable power production.
312	Solar Energy Laboratory	REEN5252	Employability & Skill Development - Student will learn handle solar module and also learn to characterize them. Student will learn to handle solar power measuring instruments.
313	Nano materials and Nano Technology	VLSI6131	Employability & Skill Development - Students will learn design and fabrication of nano-scale systems, structures of nanomaterials, preparation of nanoparticles, carbon nanotubes and porous materials, fabrication process which will enhance <u>their skill development</u>
314	RF IC Design and MEMS	VLSI6132	Employability & Skill Development - Students will learn noise and interference performance metrics like noise figure, IIP3 and different matching criteria, wireless standards and various transceiver architectures, RF receiver front end, MEMS fabrication technologies, micro-systems technology for technical feasibility which will enhance their employability and skill development
315	Process Control	AEIE3101	Employability & Skill Development - Develop the mathematical model for the liquid, thermal and gas systems. Design and simulate the ON-OFF, P, PI, PID etc. controllers both in hardware and software using electronic components, simulink, MatLab, LabVIEW etc. and also knowledge of control valve. Design and develop the ladder logic program in PLC towards the solution of the sequential events <u>performed in industry</u> .
316	Power Electronics & Drives	AEIE3102	Employability & Skill Development - Gain practical knowledge about power electronic devices. Analyze various single phase power converter circuits and understand their applications. Practical knowledge about using simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and <u>troubleshoot power electronics circuits</u> .
317	Microprocessors & Microcontrollers	AEIE3103	Employability & Skill Development - Develop the skill in program writing for 8085A microprocessor. Describe different types of memory and I/O interfacing with 8085A microprocessor. Describe the architecture of different types of programmable peripheral devices and their interfacing with 8085A microprocessor. Develop the skill to interface different types of I/O devices with 8085A microprocessor using programmable peripheral device.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
318	Fundamentals of Digital Signal Processing	AEIE3104	Employability & Skill Development - Perform mathematical operations on discrete time signals. Design algorithms of digital FIR and IIR filters according to the given specification and realize structure of a digital filter for given transfer function.
319	Introduction to Mechatronics	AEIE3111	Employability & Skill Development - Learn the functions of different types of actuators and identify their application areas. Understand the concept of signal conditioning and use of interfacing systems such as comparator, filters, amplifiers, etc. Learn the hardware and software interfacing for embedded systems.
320	Communication Techniques	AEIE3131	Employability & Skill Development - Apply detailed knowledge of analog modulation and demodulation techniques. Evaluate the performance of coding techniques. Analyze cellular concept and the strategies associated with cellular communication. Explain the role of wireless local area networks in communication systems.
321	Non Conventional Energy Sources	AEIE3132	Employability & Skill Development - Estimate the scope of wind energy for electricity generation and explain the process to harness energy from nonconventional energy sources like geothermal, tidal, ocean-thermal and wave. Evaluate the economical use of renewable energy resources compared to conventional energy sources.
322	Advanced Sensors	AEIE3133	Employability & Skill Development - Grab the concepts and application of different mechanical, electrical and acoustic sensors. Acquire the fundamental knowledge in micro sensors, sensor materials, properties and industrial applications. Understand the application of IC technology and photolithography technique in micro sensors. Learn the basics of sensor networking, coding and smart sensors.
323	Process Control Lab	AEIE3151	Employability & Skill Development - Develop skill to draw and explain P&I diagram of flow, pressure, level and temperature control loop. Apply software tool to study the close loop process responses. Create ladder logic diagram for various sequential operations commonly used in industrial environment. Provide engineering solutions of various societal, professional & environmental responsibilities.
324	Power Electronics & Drives Lab	AEIE3152	Employability & Skill Development - Gain practical knowledge about power electronic devices and simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
325	Microprocessors & Microcontrollers Lab	AEIE3153	Employability & Skill Development - Design the interfacing of input/output devices with 8085 microprocessor using partial and absolute address decoding. Build assembly language program to control input/output devices for various applications. Analyze the processing of analog signal and generation of various analog signals using interfacing circuit. Realize the programming concept of hardware interrupts in 8085 microprocessor. Interfacing of ADC, DAC, and Stepper motor with 8085A microprocessor and 8051 Microcontroller.
326	Introduction to Internet of Things	AEIE3201	Employability & Skill Development - Learn and familiarize the design challenges related to IoT systems. Develop Python applications for IoT systems. Demonstrate working knowledge of MicroPython on an ESP 8266 board. Design of an IoT system with an Arduino and ESP 8266 for sensor data acquisition. Understand functional components in an IoT Edge device. Develop machine learning applications for microcontrollers.
327	Fundamentals of Sensors and Transducers	AEIE3221	Employability & Skill Development - This course introduces students to the building and operation of many types of sensors and transducers. Converting a physical parameter into an electrical quantity. Select the best fit transducers, including those for measurement of temperature, strain, motion, position and light intensity. Choose proper sensor comparing different standards and guidelines to make sensitive measurements of physical parameters like displacement, stress, force, acceleration, flow, etc. Acquire knowledge on high temperature sensing systems used in steel, aluminium, and copper plants. Learn basic principle of smart sensors.
328	Fundamentals of Electronic Measurements	AEIE3222	Employability & Skill Development - Understand the circuit and operations for the measurement of electronic meters. Use AC and DC bridges and apply the knowledge for relevant parameter measurement. Learn the operation and construction of CRO and other special type Oscilloscopes and their applications. Know the principle and functions of signal Generator and spectrum analyzers. Get the basic knowledge about single and multichannel DAS.
329	Industrial Automation	AEIE3223	Employability & Skill Development - Learn and familiarize with the automation technologies which typically exist in industry. Explain the concept of process modeling, process dynamics and process instrumentation. Learn the controller design. Understand advanced control strategies- internal model control, cascade control, model predictive control and batch process control. Acquire knowledge about the distributed control system and its function.
330	Electronic Instrumentation	AEIE3224	Employability & Skill Development - Use electronic instruments like VCO, PLL, current mirror, charge amplifier, voltage to frequency and frequency to voltage converter. Explain the circuit operation of CRO, dual trace oscilloscope, delayed time base oscilloscope. Familiar about digital storage oscilloscope, spectrum analyzer. Explain the working of different types of digital voltmeters, digital frequency meter and digital display unit. Check the quality of a coil, capacitor using O meter.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
331	Embedded Systems	AEIE3231	Employability & Skill Development - Embedded System Application Examples: Washing Machine, Automotive Systems, Auto[1] focusing digital camera, Air-conditioner, Elevator Control System, ATM System, etc. Describe the processor, architecture and memory organization of the Embedded System. Develop the interfacing and communication techniques of the Embedded System. Understand the message passing technique, task synchronization technique.
332	Opto Electronics and Fibre Optics	AEIE3232	Employability & Skill Development - Learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. Learn the various optical source materials, LED structures, quantum efficiency, Laser diodes, fiber optical receivers such as PIN APD diodes. Specify and analyze optical optoelectronic devices in optical fiber communication. Gain the basic concepts of optoelectronics, properties and industrial applications.
333	Mobile Communication	AEIE3233	Employability & Skill Development - Learn cellular concept and the strategies associated with cellular communication. Evaluate GSM and CDMA technologies with their architecture, frame structure, system capacity as well as services provided by them. Design wireless local area networks utilizing the wireless access protocols and determine the merits and limitations of 3G technology.
334	Internet of Things Lab	AEIE3251	Employability & Skill Development - Design and conduct experiments with input and output devices using an Arduino. Program low power microcontrollers with MicroPython. Interface analog sensors with NodeMCU and Arduino for IoT applications. Develop Flask application server with NoSQL databases. Design MQTT applications using Python. Develop simple machine learning models on low power microcontrollers.
335	Term Paper and Seminar	AEIE3293	Employability & Skill Development - Build up knowledge in the field engineering, with specialization related to Electronics and Instrumentation engineering and the ability to integrate information across disciplines. Prepare quality presentation on a topic with proper organization and demonstrate the content properly with the aid of audio-video, pictures and documents, etc. Communicate effectively by making an oral presentation before an evaluation committee. Interact efficiently with audience.
336	Mini Project/Electronic Design Workshop	AEIE3295	Employability & Skill Development - Plan and implement hardware/ software project with proper budget. Demonstrate a thorough and systematic understanding of project contents. Understand methodologies and professional way of documentation and communication. Work as a team member.
337	Genetics	BIOT3101	skill development in genetic disorders, geentic counseling
338	Bioinformatics	BIOT3102	skill development in genomics databases, programming and structure prediction
339	Recombinant DNA Technology	BIOT3103	skill development in DNA cloning, restriction enzymes and DNA editing
340	Transfer Operation-II	BIOT3104	skill development in advanced trasnfer operations techniques
341	Food Biotechnology	BIOT3131	increases employment opportunity for food processing and food preservation
342	Environmental Biotechnology	BIOT3132	skill development in envionmental engineering and policies
343	Bioprocess & Process Instrumentation	BIOT3133	skill development in separation techniques
344	Genetics Lab	BIOT3151	skill development in indetification of mitotic and meiotic stages in different species
345	Bioinformatics Lab	BIOT3152	skill development in handling of various genomic databases and tools
346	Recombinant DNA Technology Lab	BIOT3153	skill development in cutting and joining DNA by restriction enzymes
347	Transfer Operations-II Lab	BIOT3154	skill development in Mass transfer and adsorption techniques
348	Food Biotechnology Lab	BIOT3181	skill development in microbial spoilage and food quality testing.
349	Environmental Biotechnology Lab	BIOT3182	skill development in study of environemntal parameters in water and soil samples
350	Bioprocess & Process Instrumentation Lab	BIOT3183	skill development in analysis of growth kinetics of bacterial cutures in different conditions
351	Immunology	BIOT3201	skill development in immunological techniques, immune disorders
352	Bioreactor Design and Analysis	BIOT3202	skill development in bioreactor types, mode of action
353	Plant Biotechnology	BIOT3211	Employability & Skill Development - increases employment opportunity in plant tissue culture sector
354	Medical and Pharmaceutical Biotechnology	BIOT3221	Employability & Skill Development - increases employment opportunity in pharmaceutical industries
355	Basics of Nanotechnology	BIOT3222	skill development in nanotechnological tools and their functions
356	Molecular Modelling and Drug Designing	BIOT3231	Employability & Skill Development - increases employment opportunity in drug designing and pharmaceutical industry
357	Biophysics of Macromolecules	BIOT3232	skill development in structure-function of enzymes and macromolecules
358	Biosensors and Diagnostics	BIOT3233	Employability & Skill Development - increases employment opportunity in biosensor and bioinstrumentation industry
359	Immunology Lab	BIOT3251	skill development and employaility in immunodiagnostic techniques from human samples
360	Bioreactor Design & Analysis Lab	BIOT3252	skill development and employability in operation of different types of bioreactors
361	Plant Tissue Culture Lab	BIOT3261	skill development and employability in plant tissue culture and explant techniques
362	Chemical Reaction Engineering I	CHEN3102	Employability & Skill Development - Student will be able to differentiate and alalyze between ideal and non ideal reactors using suitable model equations and to utilize the design strategies of non ideal reactors. They can also apply the concepts of RTD as a tool for designing and scale up industrial reactors.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
363	Mass Transfer I	CHEN3103	Employability & Skill Development - Students will be able to design various process equipment pertaining to separation process like distillation, absorption, extraction etc. Students will be able to determine mass transfer coefficients by using appropriate correlations for a given engineering problem.
364	Numerical Methods in Chemical Engineering	CHEN3104	Employability & Skill Development - Student will learn to mathematically model using linear algebra, students will be able to relate the dependent and independent variables to define the final equation. Students will be able to identify the broad category of numerical method to solve the corresponding mathematical problem. It will be also possible to model an engineering process using partial differential equations (PDE), students will be able to identify the type of PDE and its associated boundary conditions. Students will develop the numerical form of the governing equation by applying principles of numerical differentiation.
365	Chemical Reaction Engineering II	CHEN3111	Employability & Skill Development - Student will learn to identify and formulate problems in chemical and biochemical reaction engineering and find appropriate solutions. Student can able design bioreactors for both enzymatic and live cell catalyzed reactions.
366	Petrochemical Technology	CHEN3131	Employability & Skill Development - Students can understand the operation of petrochemical industry. They can learn about the technology of manufacturing of various petrochemicals that play vital role in economy.
367	Energy Engineering	CHEN3132	Employability & Skill Development - Student can learn to characterize Solid, liquid and gaseous fuel. Acquire knowledge of different crude oil extraction process. Acquire knowledge on the processing of crude oil along with an estimation of various value-added products.
368	Bioprocess Engineering	CHEN3141	Employability & Skill Development - The objective of this course is to provide basic approaches pertaining to Bio-chemical Engineering and Bio-Separation Technology. The students will be able to select suitable bioreactor and its design and scale up for whole cell catalysed reactions. The students will be able to suitable modern separation techniques for isolation, purification and quantitative separation of target biomolecule from live cells.
369	Industrial Safety and Hazards Analysis	CHEN3142	Employability & Skill Development - Ability to use important technical fundamentals of chemical process safety and to impart basic Students get knowledge that allows to evaluate occupational safety and health hazards in the workplace. They can also be able to determine hazard and potential hazard areas and to adopt appropriate hazard controls. They can analyze the effects of workplace exposures, injuries and illnesses, fatalities.
370	Numerical Computation laboratory	CHEN3151	Employability & Skill Development - The course illustrates the basics of MATLAB or equivalent software programming. Student can develop the logic for the chosen numerical method and can write MATLAB code. They learn to compile the final outcome of the given problem with expected result either in numeric or in graphical representation.
371	Energy Laboratory: Theory and Practice	CHEN3153	Employability & Skill Development - The students will be able to understand the importance of quality control of the properties of different fuels during manufacturing and in applications and execution of the activities for implementing concept of Quality in the Refineries and fuel dealers' premises or R&D projects including the commercial operations in any business or industry operations of diverse nature.
372	Process Control and Instrumentation	CHEN3201	Employability & Skill Development - Student can explain the basic principles & importance of process control in industrial process plants They can specify the required instrumentation and final elements to ensure that well-tuned control is achieved and can explain the use of block diagrams & the mathematical basis for the design of control systems.
373	Mass Transfer II	CHEN3202	Employability & Skill Development - Students will be able to design various process equipment pertaining to separation process like Cooling Tower, Extractor, Dryer. Students will be able to classify different membrane separation and will be able to evaluate the merits of the process.
374	Water and Liquid Waste Management	CHEN3221	Employability & Skill Development - Learn the methodology of Establishing and Operating Water and Liquid Waste intensive processes. Able to use the principles of Water Management in order to conserve water and solve water-shortage problems prevalent in India. Design the Water Treatment and Wastewater Treatment plants following the standard code of practice.
375	Water and Liquid Waste Management	CHEN3221	Employability & Skill Development - The objective of this course is to provide approaches of Domestic/ Industrial Water and Liquid Waste Management. The students will be able to use the principles of Water Management in order to conserve water and solve water-shortage problems prevalent in India. The students will be able to design the Water Treatment and Wastewater Treatment plants following the standard code of practice.
376	Industrial Safety and Hazards	CHEN3222	Employability & Skill Development - Ability to use important technical fundamentals of chemical process safety and to impart basic Students get knowledge that allows to evaluate occupational safety and health hazards in the workplace. They can also be able to determine hazard and potential hazard areas and to adopt appropriate hazard controls. They can analyze the effects of workplace exposures, injuries and illnesses, fatalities.
377	Novel Separation Processes	CHEN3232	Employability & Skill Development - Students will learn about the modern separation technology like ultrafiltration, reverse osmosis, membrane distillation, external field assisted separation etc. They can also get an exposure on state-of-the-art membrane fabrication technology.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
378	Nanotechnology	CHEN3233	Employability & Skill Development - Students can exhibit knowledge of the relevant physical, chemical, mechanical, electrical and optical properties of materials in nano configuration. They can also understand and decide on measurements and instruments used for characterizing nanomaterial.
379	Process Control Laboratory	CHEN3251	Employability & Skill Development - Students will learn to analyze and control industrial process.
380	Process Equipment Design & Drawing Laboratory	CHEN3253	Employability & Skill Development - Student can learn to design and Drawing Pressure Vessel - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw industrial scale Reactor.
381	Structural Analysis-II	CIVL3101	Employability: To assess the advanced methods of calculating force that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
382	Design of RCC Structures	CIVL3102	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structural elements.
383	Environmental Engineering	CIVL3103	Employability: To assess various characteristics of water, waste water and their removal techniques, various treatment units and their designs
384	Data Structure & RDBMS	CIVL3106	Employability: to understand Linear Data structures, Recursion: Design of Recursive algorithm.
385	Foundation Engineering	CIVL3141	Employability: To anchor the structure against natural forces including earthquakes, floods, droughts, frost heaves, tornadoes and wind. To provide a level surface for construction. To anchor the structure deeply into the ground, increasing its stability and preventing overloading.
386	Rock Mechanics	CIVL3142	Employability: Rock mechanics is an important field in civil engineering as it applies in the majority of infrastructure projects including dams, roads, tunnels, bridges, buildings, and protection of slopes.
387	Offshore Structures	CIVL3143	Employability: Although the industry provides the energy to fuel the world, the presence of offshore structures has both positive and negative impacts concerning pollution, navigation, and fisheries production. Current development and research is being implemented for the best use of offshore structures concerning these issues.
388	Structural Dynamics and Earthquake Engineering	CIVL3144	Employability: Structural dynamics of earthquake engineering: theory and application using Mathematica and Matlab provides civil and structural engineers and students with an understanding of the dynamic response of structures to earthquakes and the common analysis techniques employed to evaluate these responses
389	RCC Design and Detailing Lab	CIVL3152	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structural elements.
390	Design of Steel Structures	CIVL3201	Employability: Able to analyse and design steel structures for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
391	Project Planning and Management	CIVL3214	Employability : To understand the various construction equipments and its implementations, different building laws, CPM & PERT.
392	Repair and Rehabilitation of Structures	CIVL3221	Employability: Repair, rehabilitation is very important in any construction of structure. Due to aging and life increasing of the structure, it is subjected to repairs. Repairs leads to damage and failure of structure. So, in order to prevent damages and repairs in the structures these are very useful.
393	Sustainable Construction Methods	CIVL3222	Employability: The primary goal of sustainable construction is to reduce the industry's impact on the environment. Sustainable construction doesn't end when the building is complete; the building itself should have a reduced impact on the environment over its lifespan
394	Air and Noise Pollution	CIVL3241	Employability: Understand the essential concepts of Air and Noise pollution.
395	Environmental Impact Assessment	CIVL3242	Employability : Identify the need to assess and evaluate the impact on environment. Understand the different steps within environmental impact assessment.
396	Ground Improvement Techniques	CIVL3243	Employability: to improve bearing capacity and reduce settlement of soft ground, prevent earthquake liquefaction, control groundwater, stabilize excavation bottom, prevent deformation of surrounding ground, or clean up contaminated ground.
397	Advanced Structural Analysis	CIVL3244	Employability: Civil engineers use structural analysis to assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces using matrix method applications.
398	Industrial Structures Design and Detailing Lab	CIVL3251	Employability: Industrial designers develop aspects of a product that create emotional connections with the user. They integrate all aspects of form, fit and function, optimising them to create the best possible user experience
399	Computer-aided Structural Analysis and Design	CIVL3252	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
400	Term Paper and Seminar	CIVL3293	Employability: To express and present some technical matter in a lucid manner in front of the listeners who are technically sound and as well as not sound.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
401	Database Management Systems	CSEN3101	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course.
402	Formal Language & Automata Theory	CSEN3102	Employability & Skill Development - This is the basic course that teaches the students the underlying theory of computation - what can be computed and what not. The jobs that has the requirement of building new compiler for a new language or capture a input from the user pertaining to a specific regular expression must need this knowledge.
403	Object Oriented Programming	CSEN3103	Employability & Skill Development - It teaches a student the basics of OOP and to some extent gives the concept of OOD. It introduces both C++ and Java that is basically the main tool to make student survive in the market.
404	Artificial Intelligence	CSEN3111	Employability & Skill Development - This is must course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc.
405	Computer Graphics & Multimedia	CSEN3131	Employability & Skill Development - The students who are seeking jobs in graphics company that help in developing animation for films or content generation need this.
406	Data Mining & Knowledge Discovery	CSEN3132	Employability & Skill Development - Helps to get jobs in any company working in the domain of data mining as well as big data.
407	Web Technologies	CSEN3133	Employability & Skill Development - Anybody developing web applications for any company, whether on the client side or server side will find this course very helpful.
408	Graph Algorithms	CSEN3134	Employability & Skill Development - This course helps in a handful of companies that builds software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
409	Introduction to Data Analysis with Python and R	CSEN3135	Employability & Skill Development - This course teaches the principles of data analysis. Students will know how to read data from CSVs and SQL files, as well as how to process and visualise data using libraries like Numpy, Pandas, Matplotlib, and Seaborn.
410	Database Management Systems Lab	CSEN3151	Employability & Skill Development - This gives a hands-on chance to write queries and learn the different commands that a Database Administrator (DBA) needs to execute and hence helps jobs of becoming a DBA. Also good knowledge of this is required for groups writing a banking software or an ERP software.
411	Object Oriented Programming Lab	CSEN3153	Employability & Skill Development - It gives the hands-on training to code in OOPs, without which it is difficult to get a programming job anywhere in the world.
412	RDBMS Lab	CSEN3156	Employability : To perform Experiments on Database on RDBMS Platform (Oracle)
413	Artificial Intelligence Lab	CSEN3161	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
414	Software Engineering	CSEN3201	Employability & Skill Development - Any software engineer working in development project or maintenance project will need this knowledge.
415	Computer Networks	CSEN3202	Employability & Skill Development - Anybody working in a networking company, like a internet service provider, a mobile service provider, a company that builds networking hardware like CISCO or write networking software for other third party vendors need such a course.
416	Basics of RDBMS	CSEN3206	Employability & Skill Development - Create RDBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
417	Object Oriented Programming Concept By Using C++	CSEN3208	Employability & Skill Development - Ability to develop the object oriented application using C++ and improvement of performance of solution using exception handling will enhance the employability
418	Fundamentals Of Rdbms	CSEN3221	Employability & Skill Development - Knowledge of RDBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements, basic database storage structures and access techniques will enhance employability & develop skills.
419	Fundamentals Of RDBMS	CSEN3221	Employability for the improvement of programming skills. Create RDBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
420	Advanced Operating System	CSEN3231	Employability & Skill Development - This subject addresses a broad range of topics in operating system design and implementation including Synchronization, communication and scheduling in parallel systems and Distributed systems, their communication mechanisms, distributed objects and middleware. By tracing the key ideas of today's most popular systems to their origins in research, this course highlights key developments in operating system design over the last two decades and illustrates how insight has evolved to implementation.
421	Enterprise Application in Java EE	CSEN3232	Employability & Skill Development - This is highly beneficial course for students who are seeking jobs in Enterprise Application in Java EE. The Java EE platform is designed to help developers create large-scale, multi-tiered, scalable, reliable, and secure network applications. Enterprise applications are not only useful for large corporations, agencies, and governments, i.e., the benefits of an enterprise application are helpful, even essential, for individual developers and small organizations in an increasingly networked world.
422	Machine Learning	CSEN3233	Employability & Skill Development - Machine Learning is a first-class ticket to the most exciting careers in data analysis today. As data sources proliferate along with the computing power to process them, going straight to the data is one of the most straightforward ways to quickly gain insights and make predictions. Machine learning brings together computer science and statistics to harness that predictive power. It's a must-have skill for students aspiring to become successful data analysts and data scientists, or anyone else who wants to wrestle all that raw data into refined trends and predictions.
423	Cloud Computing	CSEN3235	Employability & Skill Development - The subject teaches the method of computing where a shared group of resources such as file storage, web servers, data processing services and applications are accessed via the internet.
424	Big Data	CSEN3236	Employability & Skill Development - This course introduces machine learning approaches for exploring, analysing, and leveraging data. Students will learn about the tools and methods that can be used to develop data-driven machine learning models and scale them up to huge data issues.
425	Software Engineering Lab	CSEN3251	Employability & Skill Development - It complements the corresponding theory course; students learn all the practical aspects of software engineering through mini-projects that are sometimes close replicas of what they do in the industry after joining.
426	Computer Networks Lab	CSEN3252	Employability & Skill Development - It complements the theory course in networking and helps the students to become confident with the basic hardware and software required to be handled in a company that needs to manage a network.
427	Basics of RDBMS Lab	CSEN3256	Employability & Skill Development - Define SQL and procedural interfaces to SQL comprehensively. Analyse systematic database design approaches covering conceptual design, logical design and an overview of physical design. Demonstrate techniques relating to query processing by SQL engines. Demonstrate the concepts and techniques relating to ODBC and its implementations. Understand the concepts of transactions and transaction processing.
428	Object Oriented Programming Concept By Using C++ Laboratory	CSEN3258	Employability & Skill Development - Hands on experience of object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. , other standard language constructs and other features of the C++ language including use of templates, and handling exceptions improves programming skill & Employability
429	Business Analytics	CSEN6121	Employability & Skill Development - It will help students to integrate strategic aspect of business analytics with relevant technology oriented operation aspects for actionable insight to enhance productivity and business growth. Students get competence to be employed as business analytics for customer centric value creation and enhanced business transformation.
430	Digital Communication	ECEN3101	Employability & Skill Development - Application of mathematical concepts to analyze the source coder and channel coder blocks of the digital communication system, analysis of error performance of a baseband receiver in digital communication system, understanding of various digital modulation, demodulation techniques and concept of OFDM and Spread Spectrum Modulation system will enhance employability & develop skills.
431	Digital Signal Processing	ECEN3102	Employability & Skill Development - The concept of z-transformation, convolution, knowledge of discrete-time Fourier transform to interpret DFT, FFT and design of transfer functions of IIR/FIR filters will enhance employability & develop skills.
432	Microwave Engineering	ECEN3103	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills.
433	Microprocessors and Microcontrollers	ECEN3104	Employability & Skill Development - The concepts of CPU, timing and control signals I/O devices, and various BUS structure, knowledge about interrupts, stack and subroutine , concept the architecture of 8086 family & ARM basics understanding of interfacing of processor with memory and I/O devices and analysis of microcontroller 8051 architecture will increase the employability & develop skills



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
434	Information Theory and Coding	ECEN3105	Employability & Skill Development - Knowledge of entropy, mutual information and channel capacity for all types of channels, Estimation of the merit of various methods for generating and detecting different types of error correcting codes will develop the skill.
435	Electronic Design Automation	ECEN3106	Employability & Skill Development - This is highly beneficial course for those who join the EDA industry and /or the semiconductor industry or develops software for company working embedded systems or system design.
436	Telecommunication Systems	ECEN3131	Employability & Skill Development - Concepts of signaling techniques, setting up links, working principles and practical applications of FAX, EPABX, EFT, Email, ISDN etc . knowledge of EWSD, NGN, ADSL ports will increase the employability & develop skills
437	Digital Communication Laboratory	ECEN3151	Employability & Skill Development - Hands-on experiments on Implementation and study Line codes, Analysis and comparison of time domain and frequency domain representation of various digital modulation and demodulation schemes will increase employability & develop skills.
438	Digital Signal Processing Laboratory	ECEN3152	Employability & Skill Development - Hands on experiments on application of different transformation tools-z-transform, discrete fourier transform, fast fourier transform on signals and study on the frequency response of FIR and IIR digital filters and use of DSP processors for analysis of different real time signals will improve the employability & develop skills.
439	Microwave Engineering Laboratory	ECEN3153	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills
440	Microprocessors and Microcontrollers Laboratory	ECEN3154	Employability & Skill Development - Development of ALP using the various addressing modes and data transfer instructions of the target Microprocessors (8085, 8086) and Microcontroller (8051) and interfacing of different I/O ports will increase the employability & develop skills
441	Electronic Design Automation Lab	ECEN3156	Employability & Skill Development - Signals, Systems, and Transforms, as well as different computer programming classes, are taught in the EDA Lab. This lab is also where an introduction to audio and networking course is taught.
442	Digital Vlsi Design	ECEN3201	Employability & Skill Development - Industry Requirement level learning on VLSI Design Cycle, Style and Methodology , ability to construct Physical Layout Design and Stick Diagram of Digital Gates ,ability to interpret Si Testing and Debug related algorithms and Fault Modeling will enhance the Employability and develop skill.
443	Wireless And Cellular Communication	ECEN3211	Employability & Skill Development - Understanding on different wireless networks and their operations, the current multiplexing and modulation schemes will enhance employability & develop skills.
444	Designing with Processors and Controllers	ECEN3222	Employability & Skill Development - Microprocessors and microcontrollers – their operation and programming. Identify RISC processors from CISC processors and apply them in circuits. Evaluate different hardware designs and memory configurations. Write RTOS for complex processor-based designs. Design processor and controller based intelligent systems for real life problems.
445	Designing with Processors and Controllers	ECEN3222	Employability & Skill Development - This course is designed for both controllers and processors to gain a thorough understanding of the rules and how to apply them. It also provides detailed guidance on how to manage the controller/processor relationship in practice.
446	Analog and Digital Communication	ECEN3223	Employability & Skill Development - Analog and digital modulation techniques, communication receiver and transmitter design, baseband and bandpass communication techniques, line coding techniques, noise analysis, and multiplexing techniques will all be covered in this course.
447	Analog And Digital Communication	ECEN3223	Employability & Skill Development - Skill development to analyze and design analogue and digital communication systems.
448	Digital Image Processing & Pattern Recognition	ECEN3231	Employability & Skill Development - Understanding of different types of digital image transforms, evaluation of the technique for morphological operations and image compression, knowledge of Pattern will increase the employability & develop skills
449	Iot For Communication	ECEN3232	Employability & Skill Development - Knowledge about the importance of radio transmission for IoT applications and different standards to match varying requirements, M2M area network , Physical Layers, IEEE 802.15.4 family of protocols, ZigBee and ZigBee smart energy protocols and analysis to analyze communication systems with ideas from Smart Grid and Electric Vehicle Charging projects may indulge Entrepreneurship ideas & enhance employability
450	Network Security	ECEN3234	Employability & Skill Development - Understanding of various tools and protocols for different levels of security, principles of public-key cryptosystems, hash functions, and digital signature will enhance employability & develop skills.
451	Advanced Digital Communication	ECEN3235	Employability & Skill Development - Knowledge of the multiple access schemes, OFDMA, CDMA, technologies like SIMO and MIMO will enhance employability & develop skills.
452	Digital Vlsi Design Laboratory	ECEN3251	Employability & Skill Development - Backend Design using Industry Standard Mentor Graphics CAD Tool including Eldo Circuit Simulator & Frontend design using XILINX-Vivado Simulator will enrich employability and develop Skill.
453	Wireless And Cellular Communication Laboratory	ECEN3261	Hands on experiments on working of fiber optic links ,various real time applications of wireless communication system will enhance employability & develop skills.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
454	Electrical Machines - II	ELEC3101	Employability and Skill development in- Study of various operations of Synchronous machines and Induction machines
455	Power System - I	ELEC3102	Employability and Skill development in study of various methods of conventional power generation. Employability- To develop the electrical design and the mechanical design of power transmission system and to analyze the performance of different types of transmission lines. Study of the underground cables, different type of distribution systems and power factor correction techniques provides employability.
456	Control System	ELEC3103	Employability and Entrepreneurship in control engineering designing. Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
457	Power Electronics	ELEC3104	Employability - analyze the operation of different power electronic converters
458	Digital Signal Processing	ELEC3141	Skill development in time domain signal processing and in developing efficient architectures of DSP
459	Computational Electromagnetics	ELEC3142	Skill development in concepts of electromagnetics, Finite Difference Method, Finite Element Method
460	Electrical Machines - II Lab	ELEC3151	Employability/Entrepreneurship on various testing of Synchronous machine and induction machines
461	Power System - I Lab	ELEC3152	Skill development to evaluate ABCD parameters of transmission line and to analyse dc distribution network. Measurement of the break-down strength of different insulating materials and earth resistance provides employability.
462	Control System Lab	ELEC3153	Entrepreneurship in control engineering designing. Skill development to Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
463	Power Electronics Lab	ELEC3154	Employability - In study of various power electronics circuits
464	Power System - II	ELEC3201	Employability and skill development in representation of power system, symmetrical and unsymmetrical fault analysis, power flow and stability analysis. Different grounding schemes, protective relays, circuit breakers and different protection schemes used for different sections of power system provides employability
465	Microprocessor & Microcontroller	ELEC3202	Skill development in microprocessor and microcontroller based system by acquiring concept of 8051 and 8085 architecture, assembly language programming and interfacing circuits. Design and analyze various microprocessor based systems to implement suitable application. Entrepreneurship for designing electronic products by learning the building blocks and programming of microprocessor and microcontroller, analytical and computer tools thereby creating employability
466	Electric Drives	ELEC3211	Employability - Study of different drives systems with its application and different braking schemes.
467	Illumination Engineering	ELEC3241	Employability - Design and develop energy efficient indoor lighting schemes for proper illumination following different standards
468	Electrical Machine Dynamics	ELEC3242	Skill development in the study of dynamic behaviour of different electrical machine.
469	Power System - II Lab	ELEC3251	Employability and skill development in electrical power system protection by operating different types of relay and become proficient with computer skill (e.g. ETAP) for the analysis of power system and its protection.
470	Microprocessor & Microcontroller Lab	ELEC3252	Employability & Skill Development - Provides Employability/Entrepreneurship, skill development in electrical engineering by acquiring the basic concepts and properties of 8085 microprocessor and 8051 microcontroller. Analyze and write assembly language programming related to data transfer, arithmetic and logical operations, stack and subroutine operations to design suitable application. Interface various peripheral device with 8085 microprocessor and 8051 microcontroller to implement suitable application.
471	Electrical Machine Design	ELEC3260	Employability/Entrepreneurship in Machine Design, design and develop transformer, induction motor, heating element and reactor, electronic ballast and servo motor
472	Electric Drives Lab	ELEC3261	Employability - Application of drives by using power electronics circuit for smooth control of various types of motor's speed.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
473	Term Paper and Seminar	ELEC3293	Skill development and gathering knowledge in the topics related to Electrical Engineering, preparing quality presentation with proper organization and demonstrate the content properly with the aid of audio-video, pictures and documents, etc. Communicate effectively by making an oral presentation before an evaluation committee.
474	Economics for Engineers	HMTS3201	Employability & Skill Development - It gives a basic idea how the business operates. Any student who work in productization, try to become an entrepreneur or heads a group in which he/she is responsible for profit and loss gets immensely benefitted by it. The basic concept of economics – needs, wants, utility. Get an insight of National Income-GDP, GNP, Demand & Supply Banking: role of commercial banks International Business or Trade Environment. Learn Time Value of Money and Capital Budgeting It has become an imperative for the students to acquire knowledge on the complex economic decisions from numerous options or alternatives. These decisions will ultimately result in minimizing costs and/or maximizing benefits to their respective organizations.
475	Economics for Engineers	HMTS3201	Employability & Skill Development - The basic concept of economics – needs, wants, utility. Get an insight of National Income-GDP, GNP, Demand & Supply Banking: role of commercial banks International Business or Trade Environment. <u>Learn Time Value of Money and Capital Budgeting</u>
476	Indian Constitution and Civil Society	INCO3016	Employability & Skill Development - Its preamble lays down a vision for India, which would unleash enormous amount of social progress, based on the values of justice, liberty, equality, and fraternity. But other than the preamble, the Constitution reflects a belief that the state is the sole instrument of social progress, which was not true of the history of the previous 200 years. Social progress was led almost always by civil society institutions and not by the state. Establish the relationship between the Indian Constitution and civil society at the collective as well as the individual levels. Consciously exercise the rights and the duties emanating from the Indian Constitution to one's own life and work.
477	Digital Image Processing Lab	INFO3261	Skill development in image processing and image programming helps in employability.
478	Advanced Java & Web Technology	INFO3101	Employability & Skill Development - Development of programs using markup languages and multimedia packages.
479	Operating Systems	INFO3102	Employability & Skill Development - Acquired skill of system software that manages computer hardware and software resources.
480	Design & Analysis of Algorithms	INFO3103	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which create employability.
481	Software Engineering	INFO3104	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
482	Computer Graphics	INFO3131	Employability through developing various applications which uses a multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video.
483	Distributed Database Management Systems	INFO3132	Employability & Skill Development - Gain knowledge regarding Replication and Fragmentation of databases.
484	Compiler Design	INFO3133	Employability & Skill Development - Gain Knowledge in checking syntax, testing automation and natural language processing which helps in Employability.
485	Advanced Java & Web Technology Lab	INFO3151	Employability & Skill Development - Development of programs using markup languages and multimedia packages.
486	Operating Systems Lab	INFO3152	Employability & Skill Development - Attain the knowledge in Programming for task, scheduling and memory management techniques.
487	Design & Analysis of Algorithms Lab	INFO3153	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which helps in employability.
488	Software Engineering Lab	INFO3154	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
489	Computer Networks	INFO3201	Employability & Skill Development - Gain knowledge on how to group and connect the computer systems and other computing hardware devices that are <u>linked together through communication channels</u>
490	Data Analytics	INFO3202	Employability & Skill Development - Analyzing raw data in order to make conclusions about that information. The study on complex process of examining large and varied data sets or big data to uncover information including hidden patterns
491	Digital Image Processing	INFO3211	Employability & Skill Development - Skill development in image processing and image programming helps in employability.
492	Introduction to E-Commerce	INFO3221	Employability & Skill Development - Electronic Commerce and Business Models of e – commerce. E – Payment Mechanism. Emerging technologies like Virtual/Augmented Reality, Blockchain, Internet of Things, AI and Machine Intelligence – how these technologies are influencing E-commerce. Acquire skill related to developing online web portals and web applications which helps in employability.
493	Multimedia Technology & Applications	INFO3231	Employability & Skill Development - Helps in obtaining Skill Development for Gaming and Graphic Development.
494	E-Commerce & ERP	INFO3232	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
495	Cryptography & Network Security	INFO3233	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet. Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network.
496	Computer Networks Lab	INFO3251	Employability & Skill Development - A study on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels
497	Data Analytics Lab	INFO3252	Employability & Skill Development - Gain knowledge in core programming basics and program design with functions using Python. Analyze real world datasets and apply suitable clustering algorithms to group data based on similarity.
498	Term paper and Seminar	INFO3293	Employability & Skill Development - Enhance employability due to knowledge of contemporary technology and communication skills.
499	Computational Mathematics	MATH3221	Employability & Skill Development - Analog and digital modulation techniques, communication receiver and transmitter design, baseband and bandpass communication techniques, line coding techniques, noise analysis, and multiplexing techniques will all be covered in this course. Combination of the concepts of recurrences, sums, combinatorics, arithmetic and graph theory in order to comprehend computational methods will enhance employability & develop skills.
500	Advanced Probability and Information Theory	MATH3222	Employability & Skill Development - Formulate predictive models to tackle situations where deterministic algorithms are intractable. Quantifies the amount of uncertainty involved in the value of a random variable or the outcome of a random process. Apply the data processing inequality to data science, machine learning and social science. Develop the concept of data compression in the process of encoding information in signal processing.
501	Scientific Computing	MATH3223	Employability & Skill Development - Scientific computing is the application of computing ideas and practises to tackle scientific issues in a high-powered, research-focused manner. The concept of predictor-corrector methods in solving Initial Value Problems numerically, numerical techniques in solving Boundary Value Problems where the analytical methods fail will enhance employability & develop skills.
502	Methods In Optimization	MATH4121	Employability & Skill Development - Knowledge of the way in which Game theoretic models can be useful to a variety of real-world scenarios in economics and in other areas, conversion practical situations into non-linear programming problems and solve unconstrained and constrained programming problems using analytical techniques etc will enrich employability & develop skills.
503	Object Oriented Programming With Java	MCAP1101	Skill development for object oriented programming concept.
504	Programming With Python	MCAP1102	Skill development on python programming.
505	Artificial Intelligence	MCAP1103	Skill development to gather and analyze data and communicate through artificial intelligence.
506	Java Programming Lab	MCAP1111	Employability as java developer.
507	Python Programming Lab	MCAP1112	Employability as python programmer.
508	Data Structures And Algorithms	MCAP1201	Skill development for creating or designing an algorithm to aid in the solution of a real world problem.
509	Computer Communication Networks	MCAP1202	Employability in the field of computer networking.
510	Soft Computing	MCAP1203	Skill development for effectively use of evolutionary algorithms.
511	Operating System	MCAP1204	Employability in the field of computer networking.
512	Information System Analysis And Design	MCAP1205	Entrepreneurship as understand the idea of information system in lieu of the modern abstraction of data.
513	Data Structures And Algorithms Lab	MCAP1211	Skill development for assessing how the choice of data structures and algorithm design methods impacts the performance of programs.
514	Computer Network Lab	MCAP1212	Employability in the field of networking.
515	Object Oriented Programming With Java	MCAP2101	Employability for Solving real world problems using OOP techniques.
516	Database Management System Ii	MCAP2102	Employability for Improve the database design using higher normal form.
517	Operating System	MCAP2103	Skill development in the field of system administration.
518	Design And Analysis Of Algorithm	MCAP2104	Skill development in the field of system administration.
519	Optimization Techniques	MCAP2105	Entrepreneurship to develop the idea of job sequencing to minimize the production time and costs, also to help production facility for staff allocation and equipment management.
520	Object Oriented Programming Lab	MCAP2111	Employability for understanding fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
521	Dbms Ii Lab	MCAP2112	Employability for able to execute various advance SQL queries related to Transaction Processing.
522	Computer Communication Network	MCAP2201	Employability in the field of computer networking.
523	Web Technology	MCAP2202	Employability to Able to write a server side programming using PHP with MySQL to store the data sent from client, process it and store it on database.
524	Computer Network Lab	MCAP2211	Employability in the field of networking.
525	Web Technology Lab	MCAP2212	Employability for Connect a server side program using PHP with Database Connectivity MySQL to perform insert, update and delete operations on DBMS table.
526	Soft Computing	MCAP2250	Skill development for analyzing the genetic algorithms and their applications to solve single-objective and multi-objective optimization problems.
527	Mobile Computing	MCAP2251	Skill development for fundamental concepts of Wireless Networks, different architectures of Wireless Networks and medium access related issues in Wireless Networks.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
528	Compiler Design	MCAP2252	Skill development Understand the overall hierarchy of formal instructions from source code to machine code.
529	Cryptography And Network Security	MCAP2262	Skill development acquiring knowledge on standard algorithms used to provide confidentiality, integrity and authenticity of data.
530	Ecommerce And Erp	MCAP2263	Entrepreneurship fore enterprise and Resource Management Perspective.
531	Machine Design-I	MECH3101	Employability & Skill Development - Knowledge aquired by students in this paper will help them to take part actively in designing any product or modification of any existing product for better performance.
532	Engineering Materials	MECH3103	Employability & Skill Development - Detail knowledge of engineering materials and smart newly developed materials with their properties and application can be gathered and that can be applied in mining and manufacturing industry.
533	Machining & Machine Tools	MECH3104	Employability & Skill Development - Learning the ins and outs of machining gives engineers a better chance to understand just what the machining process is capable of. It is the main foundation for precision manufacturing.
534	Dynamics of Machines	MECH3105	Employability & Skill Development - Effect of dynamic forces in a system have consequences such as unbalancing and vibration. So, the topics covered in this subject will help the students to in designing and maintainance of a machine.
535	Fluid Power Control	MECH3131	Employability & Skill Development - Students will be able to identify various components in a Fluid Power System and explain their functions. Also the design and analysis of various circuits using those components are taught, which are used to transmit power with controlled motion in industrial applications.
536	Refrigeration & Air Conditioning	MECH3132	Employability & Skill Development - Heat load calculation, ventilation requirement, Air distribution and choice of refrigerants with respect to its Ozone depletion potential etc are key factors for employment to refrigeration and Air conditioning industry which are taught in details.
537	Data Structure & RDBMS	MECH3134	Employability & Skill Development - With the knowledge of this subject students will be able to store and retriive large volumes of data effectively and also to perform manipulative operations and queries on that data.
538	Dynamics of Machines Lab	MECH3155	Employability & Skill Development - With the knowledge and experiences of this subject, students will be able to monitor vibration, measure unbalancing and do corrections, evaluate performance of governors, design a cam for specific application.
539	Fluid Power Control Lab	MECH3181	Employability & Skill Development - In the practical class, identification of various components of a Hydraulic and Pneumatic system, preparation of circuits using those components, along with the calculation of input power requirement,speed of actuator are done, which are integral parts of selection of input parameters in maching operations in industrial application.
540	Refrigeration & Air Conditioning Lab	MECH3182	Employability & Skill Development - Identification of various key components of a refrigeration and airconditioning system and the calculation of COP are extremely important for employment in refrigeration , air conditioning , and cryogenic engineering which is imparted in this Lab.
541	RDBMS Lab	MECH3184	Employability & Skill Development - Completion of this Lab will enable the students to create and recreate databases and to perform several operations on that involving large volumes of data. The theoretical concepts of databases are implemented in this lab.
542	Machine Design- II	MECH3201	Employability & Skill Development - In this paper students are taught about various machine component designs, like design of Gears, design of Breaks and Clutches, design of Pressure Vessels and design of Bearings. So detailed knowledge on this paper will give them a cutting edge to work with technical command in any mechanical company where these components are used extensively, or these machine elements are manufactured.
543	Computational Fluid Dynamics	MECH3221	Employability & Skill Development - Students will get job opportunities in various emerging technologies including R&D sectors.
544	Advanced Welding Technology	MECH3222	Employability & Skill Development - Student will gather knowledge on different advanced welding technologies and robotic welding. Student will get oppertunities to join welding machine manufacturing industry and modern fabrication shop as an employee.
545	Industrial Engineering	MECH3224	Employability & Skill Development - Students must be well versed with the productionn processes, design & the systems concerning the optimization of the entire complex processes using various parameters for the developement, improvement and implementation of the integrated systems with the aid of men, machines and materials.
546	Finite Element Method	MECH3231	Employability & Skill Development - FEM is the backbone of numerical validation of any product under design. So, knowledge on this paper will help them to be an active member in the RnD team of any company.
547	Mechatronics & Control systems	MECH3232	Employability & Skill Development - Theoretical knowledge on industrial automation and control, CNC machines, robots and automated handling system.
548	Advanced Fluid Mechanics	MECH3233	Employability & Skill Development - Theoretical concept of advanced fluid mechanics are required to design modern hydarulic plant, power plant etc.
549	Total Quality Management (TQM)	MECH3236	Employability & Skill Development - The overall approach towards TQM attempts to maximize the competitiveness of an organization through the continual improvement of the quality of priducts, services, people , processes and the environment.
550	Aerodynamics	MECH3238	Employability & Skill Development - Knowledge of aerodynamics would be helpful for students seeking job opportunities in the booming sectors like road vehicles and flying machines in the low and high speed applications.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
551	Machining & Machine Tools Lab	MECH3256	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools like lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various components. This skill will help students to select/ design/ maintain machine tools in an industry.
552	Maintenance Engineering	MECH3261	Employability & Skill Development - Owning machines and plants are not enough unless the students have fair knowledge about how well the machines are maintained, upkept, mended and tended for restoration of plant performance.
553	Renewable Energy Systems	MECH3262	Employability & Skill Development - Comprehensive know-how must be acquired by students for different renewable energy systems in the backdrop of increasing global energy demands and fast-depleting fossil fuel reserves, including their selection criteria, design and maintenance for specific applications.
554	Materials Handling	MECH3263	Employability & Skill Development - A comprehensive knowledge must be acquired by the students for different material handling equipments, including its selection criteria, maintenance and design with the specific applications.
555	CAD/CAM	MECH3264	Employability & Skill Development - CAD/CAM/CAE are the three pillar in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
556	Finite Element Method Lab	MECH3281	Employability & Skill Development - Students are taught in detail about various Pre-processing and Postprocessing tools of a FEA software in this practical paper. Knowledge on numerical analysis of any object or product under various loading and boundary conditions using a FEA software gives the students immense capability and a fair opportunity to work in the R-n-D team of any core company or to do a research work efficiently in their higher studies.
557	Mechatronics & Control systems Lab	MECH3282	Employability & Skill Development - Programming, operation and use of industrial automated equipment
558	Advanced Fluid Mechanics Lab	MECH3283	Employability & Skill Development - Practical knowledge of various hydraulic machines and piping systems would be helpful for students employment in various power plants.
559	Seminar & Term Thesis	MECH3293	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
560	Composite Materials	REEN6121	Employability & Skill Development - Impart updated knowledge and provide strong foundation to the students on the preparation, structure, fabrication, properties and applications of different advanced composite materials. students can acquire vast ideas and strong confidence in applications of high tech materials in modern devices used in both renewable and non-renewable energy sector.
561	Safety and Hazards in Energy Industry	REEN6122	Employability & Skill Development - Ability to use important technical fundamentals of chemical process safety and to impart basic Students get knowledge that allows to evaluate occupational safety and health hazards in the workplace. They can also be able to determine hazard and potential hazard areas and to adopt appropriate hazard controls. They can analyze the effects of workplace exposures, injuries and illnesses, fatalities.
562	Energy Management	REEN6141	Employability & Skill Development - Students will be able to identify and suggest energy saving opportunities, determine the total savings for a particular energy system and prepare an effectively organized energy audit report for an industrial plant. The course will help them to prepare process flow diagrams, material & energy balance diagrams and energy balance sheets for a particular energy system and will be able to optimize the energy system. Students will be able to formulate the energy policy for a particular plant and motivate employees towards effective implementation of the policy.
563	Environment Impact Assessment	REEN6143	Employability & Skill Development - The students will be able to identify the Basics of Environmental Engg. Principles need for carrying out EIA. The students will be able to analyze different technologies and Legislations / Rules. The students will be able to implement Do's & Don'ts practices for Renewable Energy Endeavours.
564	Telemetry & Remote Control	AEIE4101	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design biotelemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution systems for telemetry in process plants.
565	Power Electronics and Drives	AEIE4102	Employability & Skill Development - Gain practical knowledge about power electronic devices. Analyze various single phase power converter circuits and understand their applications. Practical knowledge about using simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
566	Telemetry & Remote Control Lab	AEIE4111	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design biotelemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution system for telemetry in process plants.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
567	Power Electronics and Drives Lab	AEIE4112	Employability & Skill Development - Gain practical knowledge about power electronic devices and simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
568	Industrial Training Evaluation	AEIE4131	Employability & Skill Development - This course has been designed for the students to gain real life working experience by visiting a Process Plant / Industry for a specified period. Thus, each & every student of AEIE should undergo industrial training for 4 weeks, during 6th – 7 th Semester break in reputed Private / Public Sector / Government organization / companies.
569	Advanced Process Control	AEIE4141	Employability & Skill Development - Develop the process models in digital domain and analyze stability of the system in digital domain. Able to develop algorithms for design of various controllers. Learn the architecture of automation systems 6. Familiar with the protocols used for designing of automation systems.
570	Soft Computing	AEIE4142	Employability & Skill Development - Design and analyze the different components of fuzzy controller appropriately to obtain the best possible fuzzy controller that can be applied to any process control systems. Acquire knowledge of different ANN terminologies to apply in solving control problems. Analyze and design algorithms for different supervised and unsupervised learning networks. Illustrate biological background and give idea about basics of genetic algorithm and its application in optimizing controller parameters
571	Power plant Instrumentation	AEIE4143	Employability & Skill Development - Design P&I diagrams for different control loops associated with thermal, hydal and Nuclear power plant. Investigate, formulate and analyze the safety requirements during power plant operation and accordingly able to design instrumentation systems for safety interlocks in power plant. Design Turbine supervisory instrumentation system. Apply engineering knowledge towards the treatment of water for industrial use. Apply contextual knowledge for analysis and measure of pollutant produced by thermal power plant.
572	Instrumentation and Telemetry	AEIE4181	Employability & Skill Development - Select the suitable pressure transducer, flow transducer, level transducer and temperature transducer for industry use. Understand the functional components of voltage, current and frequency telemetry. Familiar with the scheme of transmission of multiple sensor data based on time division multiplexing and frequency division multiplexing.
573	Introduction to Embedded Systems	AEIE4182	Employability & Skill Development - This introductory course helps students to learn the working principles of embedded systems, which might be essential for an automobile company to a company that develops that caters the clients manufacturing consumer electronic and or electrical goods. Design different embedded systems with microcontroller of different memory specification or RAM specification. Design single purpose processors and basic architecture and operation, multipurpose controller-architecture, operation, codes and programming. Understand the application of different RAMs and ROMs and interfacing. Interface microcontroller and design the hardware and software to control the operation of I/o devices like LCDs, Keyboard, Stepper Motor, A/d converter etc.
574	Project I	AEIE4191	Employability & Skill Development - Project should be on any topic having relevance with Electronics, Instrumentation, Electrical or inter-disciplinary field of engineering. Project should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
575	Comprehensive Viva Voce	AEIE4231	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning. Gain confidence and inter-personal skills.
576	Technical Seminar II	AEIE4232	Employability & Skill Development - The main objective of this course work is to encourage self-learning in the field of student's own interest among the emerging areas of technology. The student is expected to do an extensive literature survey in his subjects of interest and present seminar on a research problem, available methods in literature, future trends, etc. to a group of experts.
577	Analytical Instrumentation	AEIE4241	Employability & Skill Development - Get ideas of different analytical methods like pH analysis, conductivity analysis etc.for liquid sample. Understand UV-VIS , IR spectroscopic techniques for the liquid analysis. Know X-ray spectroscopy and NMR spectroscopy for the analysis of sample. Familiar with gas chromatography and liquid chromatography for sample analysis.
578	Ultrasonic Instrumentation	AEIE4242	Employability & Skill Development - Know about ultrasonic equipments, A, B, and M-scan presentation of test indications and interpretation. Develop knowledge on different ultrasonic methods of applications. Apply the knowledge of ultrasonic instrumentation for non-destructive testing. Applications of ultrasonic instruments for measuring thickness, depth, flow and level. Applications of ultrasonic instrumentations in medical sciences.
579	Digital Control Systems	AEIE4243	Employability & Skill Development - Design of digital control systems with digital controllers through bilinear transformation; digital PID-controller; different class of digital controllers, general synthesis method, dead beat response design, Dahlin design, ringing and placement of poles.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
580	Sensor Technology	AEIE4281	Employability & Skill Development - This subject enables students to grab the concepts and application of different mechanical, electrical and acoustic sensors. Acquire the fundamental knowledge in micro sensors, sensor materials, properties and industrial applications. Understand the application of IC technology and photolithography technique in micro sensors. Learn the basics of sensor networking, coding and smart sensors and propose a sensor system design to solve a problem, a very helpful course for working IOT.
581	Control Systems and Applications	AEIE4282	Employability & Skill Development - Models of control devices and systems - dc servomotors, ac servomotors, dc motor speed and position control, synchro. Basic control actions- Introduction to conventional controllers (P, PI, PD and PID) and application.
582	Project II	AEIE4291	Employability & Skill Development - Demonstrate ability to identify and formulate real world engineering problems relevant to society needs. Apply knowledge of circuit design, sensor selection, signal processing, control system, embedded system and programming, etc., to implement the project work with proper time frame. Implement hardware model along with its relevant software programming, conduct experiments, analyze and interpret data and explain them. Develop interpersonal communication skill and demonstrate sound technical knowledge of their project work.
583	Animal Cell Culture & Animal Biotechnology	BIOT4101	increases skill development in cell culture techniques in diagnostics and research
584	Bioseparation Technology	BIOT4102	skill development in separation processes and techniques
585	Food Biotechnology	BIOT4141	increases employment opportunity for food processing and food preservation
586	Environmental Biotechnology	BIOT4142	skill development in environmental engineering and policies
587	Bioprocess & Process Instrumentation	BIOT4143	skill development in separation techniques
588	Modeling & Simulation of Bioprocess	BIOT4161	skill development in knowledge of modeling and simulation of biological pathways
589	Biomaterials	BIOT4162	increases employment opportunity in bioimplants sector
590	Biometallurgy	BIOT4163	increases employment opportunity in metallurgy sector
591	Proteomics and Protein Engineering	BIOT4164	increases skill development in proteomics tools
592	Human Genomics	BIOT4165	increases employment opportunity in human genomics research and analysis
593	Biosensors	BIOT4181	Employability & Skill Development - This subject familiarizes students with bio-recognition elements and introduces them to transducers and biosensors. Knowledge in this subject is beneficial to students for acquiring jobs in clinical and diagnostic sector, industrial sector, food and environment sector, defence sector and a host of other areas.
594	Biopolymers	BIOT4182	increases skill development in production of different products by biopolymer
595	Renewable Energy Technology	BIOT4241	increases employment opportunity in renewable energy sector
596	Tissue Engineering	BIOT4242	increases employment opportunity in tissue manufacturing and pharmaceutical sector
597	Biomedical Engineering	BIOT4243	increases employment opportunity in biomedical instrumentation sector
598	Post Harvest Technology	BIOT4244	increases employment opportunity in crop harvesting sector
599	Metabolic Engineering	BIOT4245	increases skill development in metabolic processes and pathways
600	Medical & Pharmaceutical Biotechnology	BIOT4246	increases employment opportunity in pharmaceutical industries
601	Basic Process Equipment Design	BIOT4247	increases employment opportunity in designing sector and processing sector
602	Computational Biology	BIOT4281	Increases employment opportunity in bioinformatics and drug designing sector Molecular Modeling and Dynamics: introduction to Open MM library; GROMACS as an example of GUI in the public domain; computer based drug design (public domain and proprietary); Mathematical modeling of cell growth kinetics; Embedded systems for computational biology: High throughput data collection, processing and analysis; LCMS, DNA microarrays and other applications; Systems biology and Metabolic Engineering.
603	Non-conventional Energy	BIOT4282	Employability & Skill Development - Application of the concepts of solar energy to design Photovoltaic cells and wind energy to design wind turbine , Understanding the concept of hydrogen energy as a clean fuel and characterize the hydrogen production process etc will enhance employability & develop skills.
604	Modeling Simulation & optimization	CHEN4103	Employability & Skill Development - students will be able to analyze the given system to mathematically formulate the complete optimization problem required.students will be able to select the appropriate separation process and process equipment, and will be able to apply heuristics for choosing the correct operating methods for the equipment.
605	Industrial Training	CHEN4131	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to a chemical industry
606	Seminar II	CHEN4132	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner
607	Reactor Design	CHEN4141	Employability & Skill Development - The course demonstrate the technique to design reactor that can handle multiphase multicomponent system of species.
608	Industrial Safety & Hazard Analysis	CHEN4142	Employability & Skill Development - Ability to use important technical fundamentals of chemical process safety and to impart basic Students get knowledge that allows to evaluate occupational safety and health hazards in the workplace. They can also be able to determine hazard and potential hazard areas and to adopt appropriate hazard controls. They can analyze the effects of workplace exposures, injuries and illnesses, fatalities.



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
609	Safety and Hazard Analysis	CHEN4181	Employability : Ability to understand and recognize the important technical fundamentals of chemical process safety and to impart basic knowledge that allows the students to evaluate occupational safety and health hazards in the workplace.
610	Project Management	CHEN4182	Employability & Skill Development - This subject is considered to be fundamental for achieving the target of cost, time and scope of chemical and mechanical engineering activity. This skill will enable students to excel in their respective area of work.
611	Plant Design	CHEN4221	Employability & Skill Development - Students will learn to design a chemical process industry and also can assess the techno-economic feasibility of the the plant.
612	Catalysis & Catalytic Reactor Design	CHEN4241	Employability & Skill Development - Student will learn to identify and formulate problems in chemical and biochemical reaction engineering and find appropriate solutions. Student can able design bioreactors for both enzymatic and live cell catalyzed reactions.
613	Total Quality Management	CHEN4242	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
614	Total Quality Management & Assurance	CHEN4282	Skill development in understanding the significance of quality management inside and outside of the organization, to identify and control the quality of processes, to evaluate the process capabilities of different processes in any business process, to apply modern quality management like Six Sigma techniques. Skill development in various sampling techniques and develop different sampling plans to evaluate quality of various types of defects, to prepare network of activities involved in project for plant design or other business processes , to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method
615	Water Resources Engineering	CIVL4101	Employability: Water resources play an important role in the economic development of a nation. No one can imagine the life of living beings without the consumption of water. A water can use by the nation for various purpose such as hydro electricity, irrigation, etc.
616	Computer Application in Civil Engg	CIVL4111	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
617	Industrial Training Evaluation	CIVL4131	Employability: Industrial training, where a student undertakes a period of training with an organization usually during a semester break, act as an important part in preparing the student for a professional career. With the active involved preparation,the student learns about the industrial demands, skill set and work ethics.
618	Seminar II	CIVL4132	Entrepreneurship: To impart training to the students in collecting materials on a specific topic from journal or other sources and organise them into logical sequence and presenting the matter effectively both orally and as technical report.
619	Advanced Structural Analysis	CIVL4141	Employability: Civil engineers use structural analysis to assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces using matrix method applications.
620	Remote Sensing and GIS	CIVL4142	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.
621	Advanced Pavement Engineering	CIVL4143	Employability: The ultimate aim of pavement design is to ensure that the transmitted stresses due to wheel load are sufficiently reduced, so that they will not exceed bearing capacity of the sub-grade. Two types of pavements are generally recognized as serving this purpose, namely flexible pavements and rigid pavements.
622	Hydraulics Structures	CIVL4144	Employability: Without hydraulic structures, the world would be spending half of their time looking and fetching water. Hydraulic structures are built to make life easier, pleasant and secure. The building of these structures not been easy especially when civil engineering was not modernized.
623	Soil Dynamics and Machine Foundations	CIVL4161	Employability: Soil dynamics drive elemental cycles, have controlling roles in ecosystem functions, and are largely determinants of emergent properties (properties not obvious from the study of processes at finer levels of organization), such as decomposition rates, biodiversity, and system stability. A machine foundation necessitates a special concern as they are designed to transmit dynamic loads to soil strata in addition to static loads.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
624	Structural Dynamics & Earthquake Engineering	CIVL4162	Employability: Structural dynamics of earthquake engineering: theory and application using Mathematica and Matlab provides civil and structural engineers and students with an understanding of the dynamic response of structures to earthquakes and the common analysis techniques employed to evaluate these responses
625	Environmental Pollution & Control	CIVL4163	Employability : To understand various types of global environmental issues and learn about the different kind of pollution .
626	Advanced R.C.C. Design	CIVL4164	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structures which are of high importance.
627	Building Materials	CIVL4181	Employability & Skill Development - To construct any building, proper materials selection is very important part of the project. This subject prepare the promising engineers suitable for industry and also learn how to build the buiding with minimum cost and asses the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates, concrete, steel, etc
628	Hydrology	CIVL4182	Employability: Hydrology has evolved as a science in response to the need to understand the complex water systems of the Earth and help solve water problems. Hydrologists play a vital role in finding solutions to water problems, and interesting and challenging careers are available to those who choose to study hydrology.
629	Environmental Pollution & Control	CIVL4183	Employability: Understand the essential concepts of Air and Noise pollution.
630	Project -I	CIVL4191	Employability: Students undertake a research/ industrial/pratical oriented project work under the guidance of a particluar faculty. In-depth knowledge on a particluar topic helps the student to be industry ready.
631	Construction Planning and Project Management	CIVL4201	Employability : To understant the various constructon equipments and its implementations , different building laws , CPM & PERT .
632	Comprehensive Viva Voce	CIVL4231	Employability: The objective of comprehensive viva-voce is to assess the overall knowledge of the student in the relevant field of Engineering acquired over 4 years of study in the undergraduate program .
633	Bridge Engineering	CIVL4241	Employability: Bridge engineering is an engineering discipline branching from civil engineering that involves the planning, design, construction, operation, and maintenance of bridges to ensure safe and effective transportation of vehicles, people and goods
634	Traffic Engineering and Transportation Planning	CIVL4242	Employability: To assess the different types of pavement,ingredients with which they are constructed,process of construction,detailed knowledge of traffic like design of rotary intersection, signal design.
635	Advanced Foundation Engineering	CIVL4243	Employability & Skill Development -
636	Finite Element Analysis	CIVL4244	Employability: Finite Element Analysis (FEA) is a method of analysing how a part or assembly will perform over its lifetime. FEA enables you to predict potential design issues and therefore minimise risk to your product, profits, and your business.
637	Remote Sensing and GIS	CIVL4281	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.
638	Principles of Surveying	CIVL4282	Employability & Skill Development - Surveying is the art of determining the relative position of various features above, on, or beneath the surface of the earth by means of different instruments. Students learn by their own hand the application of surveying and it is very much helpful to the industry and also develop their skills. The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
639	Project Planning and Management	CIVL4283	Employability & Skill Development - This subject help the students for employability because the students Think of their plan as a roadmap for stakeholders, break the project into a list of deliverables, Talk to their team, identify risks, create a budget, add milestones, set progress reporting guidelines etc.
640	Project II	CIVL4291	Employability: Students undertake a research/ industrial/pratical oriented project work under the guidance of a particluar faculty. In-depth knowledge on a particluar topic helps the student to be industry ready.
641	Compiler Construction	CSEN4101	Employability & Skill Development - This courses teaches the students all the phases of thorough which a compiler runs while translating a code and also to write compiler for a given language. Though the writing a of new compiler does not arise everyday in the industry, still the concepts help a lot to write a cross compiler for translating code from one language to other and many times comanies working in DSP s need to implement a language with a small set of instructions, though it ost happens at assembly level, the concepts of compiler construction are difficult to ignore if one wants to contribute effectively in such projects or products.
642	Compiler Construction Lab	CSEN4111	Employability & Skill Development - It complements the theory course in compiler and helps the students to become confident with the in depth knowledge of how a program is compiled and how it really works; what are the data structures and techniques associated with it.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
643	Industrial Training	CSEN4131	Employability & Skill Development - This course allows the students to get an exposure to the projects that are currently ongoing in a industry as an intern or a tarinee. They acquire ample knowledge on how to execute real-life projects in the industry.
644	Seminar II	CSEN4132	Employability & Skill Development - Soft skills and presentation abilities constitute an important part of majority job profiles. This subject gives each student the much needed opportunity to work as a team, present to an audience and receive constructive feedback on their performance which helps them to identify areas that need improvement.
645	Information Retrieval	CSEN4141	Employability & Skill Development - This course is a must for students working in Natural Language Processing.(NLP) projects in the companies that develop projects/products requiring NLP. It may be softwares for social media, customer interface or even fraud detection.
646	Advanced Operating System	CSEN4142	Employability & Skill Development - Any system related jobs or companies developing linux based open source software have a need for this expertise.
647	Data Mining and Knowledge Discovery	CSEN4144	Employability & Skill Development - Many companies thrive on mined data from internet or customer data generated from online purchases, or by discovering patterns from financial data. These companies need professionals with the proper training in Data Mining.
648	Cloud Computing	CSEN4145	Employability & Skill Development - The days of proprietary infrastructure is fast receding and in practice more and more companies are becoming confident to keep their valued data on cloud. Under this scenario, many service-oriented companies also get huge projects that require a knowledge of cloud computing in the background and also have dedicated teams looking after cloud aspects. This course help our students to target those jobs.
649	Natural Language Processing	CSEN4161	Employability & Skill Development - In this age of automation and AI driven industry, NLP is the course that companies look for along with ML in the curriculum, so it helps the students to apply for these high-paying new-age jobs.
650	Cryptography and Network Security	CSEN4162	Employability & Skill Development - As internet banking and online purchases are increasing by leaps and bounds, the cases of fraud related to these technologies are on the rise. The knowledge of cryptography and cyber security have become a dire necessity while implementing these software. A few of our students work in specilaized cryptography applications in the industry.
651	Graph Algorithms	CSEN4163	Employability & Skill Development - This course helps in a handful of companies that builds software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
652	Parallel Algorithm	CSEN4164	Employability & Skill Development - This advanced course helps students to learn how an algorithm can be executed simultaneously by dividing it into independent sub-algorithms, which is very much required by companies that design processors. Also a lot of research happens on this topic, so for higher studies also this is an important skill.
653	Web Intelligence and Big Data	CSEN4165	Employability & Skill Development - This course is about building 'web-intelligent' applications exploiting big data sources arising in social media, mobile devices and sensors, using new big-data platforms based on the 'map-reduce' parallel programming paradigm. Hence all data driven companies need this expertise.
654	Fundamentals Of Operating Systems	CSEN4181	Employability & Skill Development - Understanding the various design issues in process management , learning of operating system operation, structures etc will enhance employability & develop skills.
655	Web Intelligence and Big Data	CSEN4182	Employability & Skill Development - Understanding on the key issues in big data management and its associated applications in intelligent business and scientific computing, the knowledge of Big Data and web intelligence on industry applications etc will enhance employability , Entrepreneurship & develop skills.
656	Project I	CSEN4191	Employability & Skill Development - As part of this subject students work on a computing problem in a team and try to come up with insights and solutions to the problem, under the guidance of a mentor. This experience of working as a team and the exposure to problem analysis helps to groom them for their future professional commitments.
657	Distributed Algorithms	CSEN4241	Employability & Skill Development - Behind every computing process and every program design is an algorithm, that guarantees the success of the process when formulated properly. As computation becomes more distributed, the algorithm also evolves along with it. A knowledge of distributed algorithm design is must for many job profiles that deal with distributed systems.
658	Approximation Algorithms	CSEN4242	Employability & Skill Development - Optimization problems that are NP-hard are an important category of problems in computer science. Studying efficient approximation algorithms to find appropriate solutions to such problems prepare students to tackle research oriented job profiles that need knowledgeable candidates to tackle complex problems.
659	Pattern Recognition	CSEN4244	Employability & Skill Development - Extracting meaningful features from a vast repository of media resources is a very important line of work in recent times that arm employers with a wealth of information. Pattern recognition teaches the student how to empower machines with human recognition intelligence and thus extract useful and critical information.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
660	Social Network Analysis	CSEN4245	Employability & Skill Development - In this current era of customised products and target oriented research and recommendations this subject is an essential addition. Students undertaking this subject learn how to look for patterns of relation among people and groups and thus enabling them make important deductions.
661	Mobile Computing	CSEN4246	Employability & Skill Development - The underlying network architecture of data communication in a mobile environment is a must to have knowledge for any computer science engineer. Knowing the concepts of such data communication is sure to give students an edge in the job market.
662	Distributed Databases	CSEN4261	Employability & Skill Development - Most job profiles in computer science have one aspect in common and that is data storage. This is even more relevant in the current times of big data where the amount of data being generated has increased manifold and this data needs to be stored and accessed in a distributed environment. This subject provides knowledge that will familiarize students with the nuances of data storage and access.
663	Image Processing	CSEN4262	Employability & Skill Development - Any company working in computer vision (such as remote sensing, pattern matching) needs students who have attended this course.
664	Soft Computing	CSEN4263	Employability & Skill Development - Any project that requires to solve some NP-complete (hard) problems in real time, which are not solvable in polynomial time at all need such a course.
665	Machine Learning	CSEN4264	Employability & Skill Development - This is a one-level up course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc. Right now whole computation system is data driven and machine learning helps students to use it as a tool to provide data-driven services.
666	Real Time & Embedded System	CSEN4265	Employability & Skill Development - This advanced course helps students to learn the real-time working principles of embedded systems, how they communicate and process among themselves in real-time, which is very much required in this modern era of IOT.
667	Distributed Databases Lab	CSEN4271	Employability & Skill Development - Distributed Database Systems lab simulates real-world, hardware, software, and command-line interface environments. The DDBMS lab course covers fundamental concepts necessary for designing, using, and implementing database systems and applications; database modeling and design; languages and models provided by database management systems; and database system implementation techniques.
668	Image Processing Lab	CSEN4272	Employability & Skill Development - It complements the theory course in image processing and student learns various matlab and python based tools to do computations on various type of images, which is a must before joining any company in the computer vision or handling image processing projects.
669	Soft Computing Lab	CSEN4273	Employability & Skill Development - Students get a chance to do some basic projects, where various soft computing techniques like fuzzy logic, genetic algorithms and other evolutionary algorithms are learnt through real-life problems.
670	Machine Learning Lab	CSEN4274	Employability & Skill Development - It complements the theory course in Machine Learning and student learns various tools like tensorflow, azure and other python based tools to operate on various data-driven real life problems.
671	Real Time & Embedded System Lab	CSEN4275	Employability & Skill Development - Students get a chance to work on some Arduino projects that give the test of making something work on their own before joining the industry.
672	Fundamentals of RDBMS	CSEN4281	Employability & Skill Development - Master the basic concepts and understand the applications of database systems. Understand the basic database storage structures and access techniques. 6. Distinguish between good and bad database design, apply data normalization principles, and be aware of the impact of data redundancy on database integrity and maintainability. Construct queries and maintain a simple database using SQL. Apply database transaction management and database recovery.
673	Project II	CSEN4291	Employability & Skill Development - The team work skills and problem analysis skills that the students start to learn with the subject Project I are further intensified in this subject. The focus here is more on arriving at a solution, in the form of a research paper, or a website design etc. and presenting the solution to a distinguished audience. The experience of team work, solution-oriented approach and presentation skill help the students in acquiring and pursuing lucrative jobs.
674	RF & Microwave Engineering	ECEN4101	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills.
675	Coding & Information Theory	ECEN4102	Employability & Skill Development - Knowledge of entropy, mutual information and channel capacity for all types of channels, Estimation of the merit of various methods for generating and detecting different types of error correcting codes will develop the skill.
676	Advanced Communication Systems	ECEN4103	Employability & Skill Development - Understanding on different wireless networks and their operations, the current multiplexing and modulation schemes will enhance employability & develop skills.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
677	RF & Microwave Engineering Laboratory	ECEN4111	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills
678	Advanced Communication Systems Laboratory	ECEN4113	Employability & Skill Development - Hands on experiments on working of fiber optic links ,various real time applications of wireless communication system will enhance employability & develop skills.
679	VLSI Design Automation	ECEN4181	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques that are required to build a chip in a precise manner, which is done by a robotic arm and at the nano meter scale, so precision really matters. All these skills are very much required in a multi-national EDA company. Determine logic and performance of CMOS combinational as well as sequential logic and apply the lambda based design rules. Construct physical layout design and stick diagram of digital gates. Classify between VLSI design cycle, style and methodology and also build various stages of miniaturization. Make use of various synthesis flow and HDL modeling in ASIC semi custom design. Build different logical synthesis algorithm
680	Principles of Communication systems	ECEN4183	Employability & Skill Development - In this modern era of fast communication one must know all the different principles of communication, the course provides the students with all the basics that are required to work in a company that develops software for voice or data communication.
681	Remote Sensing using Satellites	ECEN4241	Employability & Skill Development - Realization of the physical, architectural and networking issues of the satellite system, concepts of basics of remote sensing principles and technology etc will enhance employability & develop skills.
682	Cellular and Satellite Communications	ECEN4281	Employability & Skill Development - Identify GSM and CDMA Cellular architecture and its various parameters. Multiple access techniques used for Satellite Communication. Understand various orbits, orbital parameters, satellite launch vehicles etc. Design uplink and downlink for satellite networks.
683	VLSI Design	ECEN4282	Employability & Skill Development - This course helps the learners to learn the basic principles of building various analog and digital circuits from scratch. Starting from CMOS. All these are very much required in a multi-national semiconductor company.
684	VLSI Testing & Verification	ECEN4283	Employability & Skill Development - Without testing no chip can go to the market and this course provides the learners all the knowledge of how to write a software that can perform the pre and postbond testing.
685	Seminar-I	ELEC4031	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.
686	Seminar-II	ELEC4032	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.
687	Electric Drives & Power Utilization	ELEC4101	Employability -Study of different drives system with its practical application and different braking schemes .Explain application field of drives in traction system . Knowledge of Other application in the field of electric heating ,welding and illumination engineering.
688	High Voltage Engineering	ELEC4102	Employability/Entrepreneurship-Generation, Measurement and Testing of high voltage
689	Electric Drives Lab	ELEC4111	Employability -Application of drives by using power electronics circuit for smooth control of various types of motor's speed.
690	Electrical Machine Design	ELEC4121	Employability/Entrepreneurship in Machine Design, design and develop transformer, induction motor, heating element and reactor, electronic
691	Advanced Power System	ELEC4161	Employability & Skill Development - Economic dispatch and Unit Commitment helps to know the effective usage of the power flow in GRID. Skill development to analyze the load Frequency control and voltage control. Knowledge of travelling waves, generation of overvoltages on transmission lines & its protection, different compensation techniques in power system and the application of FACTs provides employability & skill development in Power System. Introduce HVDC transmission.
692	Advanced Control System	ELEC4162	Employability -In the design for mathematical modeling of finding Transfer function of physical systems , Time response, compensating techniques etc,
693	Circuit Theory Analysis	ELEC4182	Employability : to understand network equation , laplace transform , graph theory , two port Networks etc .

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
694	Project - I	ELEC4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints
695	Electrical System Design	ELEC4221	Employability- Design power distribution system, installation design of multistoried residential building, designing of a substation, design of control circuit of lift mechanism, road lighting scheme, energy efficient lighting scheme.
696	Fundamentals of Illumination Engineering	ELEC4282	Employability : to get acquainted with the laws of Photometry for calculation of illumination levels for different lighting operations .
697	Project - II	ELEC4291	Encourages entrepreneurship, skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints
698	Professional Development	HMTS4121	Entrepreneurship: The start-up ecosystem in India- Why entrepreneurship?, Indian tech start-up landscape, Stand-up India policies, funding agencies, market development, trends and best practices E-Commerce- India as a growing E-commerce market, Possibilities of growth, funding, niche retailers Make in India- New processes, Investments, Focus sectors, Makers of Make In India, Opportunities, Policies.
699	Organizational Behaviour	HMTS4201	Employability & Skill Development - A comprehensive knowledge of interpersonal and leadership skills, motivation, attitude and perception are essential for any job engagement. Organizational behaviour aims to empower students with such essential knowledge and make them ready to take on any responsibility with confidence and conviction.
700	Project Management	HMTS4202	Employability & Skill Development - Project management is considered to be fundamental for achieving the target of cost, time and scope of any engineering activity. This skill will enable students to excel in their respective area of work.
701	Bioethics & IPR	HMTS4203	Employability & Skill Development - increases skill development in bioethics guidelines, patenting and trademark
702	Introduction to Industrial Sociology	HMTS4281	Employability & Skill Development - Industrial sociology is an applied discipline. It is concerned with the study of human relations as they grow and operate in the field of industries. It deals with the sociological concepts that have relevance to industry. It concentrates upon the social organizations of the work place or industry.
703	Critical Gender Studies	HMTS4282	Employability: Gender studies in the two-year program is defined as "critical" Gender Studies, signaling the ways in which students are trained to critically analyze established ideas, systems, and inequalities that decrease the possibilities for women and men to fully reach their human potential.
704	Elementary Spanish for beginners	HMTS4283	Employability & Skill Development - In this course, students will learn both basic and advanced Spanish vocabulary, grammar and pronunciation, that helps in companies who headquarters in Spain or Latin American countries.
705	Internet Technology	INFO4101	Employability & Skill Development - Understanding best technologies for solving web client/server problems, analyze and design real time web applications, use Java script for dynamic effects and to validate form input entry.
706	Image Processing	INFO4102	Skill development in image processing and image programming helps in employability.
707	Internet Technology Laboratory	INFO4111	Employability & Skill Development - Gain knowledge in client side programming ,interactive web applications .
708	Image Processing Laboratory	INFO4112	Skill development in image processing and image programming helps in employability.
709	Industry Competence Laboratory	INFO4121	Employability & Skill Development - Helps in employability through a project with industry orientation aspects directly suggested by experienced person from Software Industry. Also develop skill for creating Requirement Specification of allotted project with industry specified Requirement Specification Standard. Develop manual testing modules as guided by industry expert.
710	Industrial Training Evaluation	INFO4131	Employability & Skill Development - Helps in employability through a real life industry environment and also work as a part of the team . Gather experience of team work ,work sharing and work scheduling in real time scenario.
711	Distributed Operating System	INFO4141	Employability & Skill Development - Learn about operating system design and implementation including Operating system structure, Synchronization, communication and scheduling in parallel systems
712	Cyber Law & Security Policy	INFO4142	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.
713	Fundamentals of Cloud Computing	INFO4143	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing.
714	Cyber Crime & Cyber Security	INFO4181	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
715	Cloud Computing	INFO4182	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing. Understanding of the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc & system, network and storage virtualization and outline their role in enabling the cloud computing system model will enrich employability & develop skills.
716	Project - I	INFO4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints.
717	Comprehensive Viva Voce	INFO4231	Employability & Skill Development - Gain knowledge about contemporary issues in various subjects.
718	Parallel Computing	INFO4241	Employability & Skill Development - The use of parallel processing for running advanced application programs efficiently, reliably and quickly.
719	Natural Language Processing	INFO4242	Employability & Skill Development - The ability of a computer program to understand human language as it is spoken.
720	Cryptography & Network Security	INFO4243	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet. Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network.
721	Soft Computing	INFO4244	Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
722	Fundamentals of Cryptography	INFO4281	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet. Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network. Understanding of various tools and protocols for different levels of security, principles of public-key cryptosystems, hash functions, and digital signature will enhance employability & develop skills.
723	Soft Computing Application	INFO4282	Skill development to identify interactive problems, reproduce optimal solution, to determine complexity of computation, to assemble different techniques to sketch a hybrid system, able to interpret the problems in terms of time and space, justify optimal solution and able to predict the running time of the program Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
724	Project - II	INFO4291	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints.
725	Operation Research and Optimization techniques	MATH4181	Employability & Skill Development - Operations Research (OR) is a field in which students use mathematical and engineering methods to study optimization problems in Business and Management, Economics, Computer Science, Civil Engineering, Electrical Engineering, etc. This subject focuses on deterministic optimization techniques, which is a major part of the field of OR followed by several efficient algorithms for solving linear programs, integer programs, and nonlinear programs.
726	Linear Algebra	MATH4182	Employability & Skill Development - This course covers matrix theory and linear algebra, emphasizing topics useful in other disciplines. Linear algebra is a branch of mathematics that studies systems of linear equations and the properties of matrices. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering and most importantly in any company that requires machine learning for its projects
727	Probability and Stochastic Process	MATH4281	Employability & Skill Development - This course makes students gain familiarity with probability and stochastic processes concepts which they need for their experiments and research. It also covers theoretical concepts of probability and stochastic processes pertaining to handling various stochastic modeling. This course provides random variable, distributions, moments, modes of convergences, classification and properties of stochastic processes, stationary processes, discrete and continuous time Markov chains and simple Markovian queueing models, all of this is very much essential for companies using machine learning to boost up their sales.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
728	Advanced Computational Mathematics and Graph theory	MATH4282	Employability & Skill Development - Advanced Graph Theory focuses on problem solving using the most important notions of graph theory with an in-depth study of concepts on the applications in the field of computer science. This course provides an in-depth understanding of Graphs and fundamental principles and models underlying the theory and algorithms. Emerging applications of Graph Theory in Computer Science domain will be covered for significant impact. Through this subject students will have intimate knowledge about how the graph theory play an important role to solve the technology driven and research oriented problems. It is a shot in the arm for the students who pursue higher studies in Computer Science as well as those who work for companies working in EDA, traffic simulation etc.
729	Design And Analysis Of Algorithms	MCAP2101	Skill development to design and analysis of algorithms.
730	Data Communication And Computer Network	MCAP2102	Employability in the field of computer networking.
731	Database Management Systems Ii	MCAP2103	Employability in the field of database applications.
732	Operating System	MCAP2104	Skill development in the field of system administration.
733	Algorithm Lab	MCAP2111	Skill development to understand the algorithm.
734	Unix And Network Programming Lab	MCAP2112	Employability in the field of networking and understand the cocept of UNIX operating system.
735	Dbms Ii Lab	MCAP2113	Employability through familiarizing with PL/SQL programming including stored procedures, stored functions.
736	Software Engineering	MCAP2201	Entrepreneurship for design, development and implementation of software based on requirements.
737	Web Technology	MCAP2202	Employability in the process of understanding the concept of Web Technologies along with applications.
738	Computer Graphics	MCAP2203	Skill development to understand the detail of Computer Graphics.
739	Intelligent Systems	MCAP2204	Skill development to gather and analyze data and communicate with other system.
740	Software Engineering Lab	MCAP2211	Entrepreneurship for developing a quality software for customer as per requirements.
741	Web Technology Lab	MCAP2212	Employability for developing the web pages using HTML, CSS, JavaScript, XML, PHP with SQL for database connectivity
742	Graphics Lab	MCAP2213	Employability in the field of Graphic designing.
743	Power Plant Engineering	MECH4101	Employability & Skill Development - Coal based thermal power plant, Hydroelectric power plant, Nuclear Power plant are taught in this subject which are very core knowledge in Mechanical Engineering and key to employment in Power Sector.
744	Advanced Manufacturing Technology	MECH4102	Employability & Skill Development - This subject enhance in precision manufacturing by smart technological systems, lowers error rates and product failures, overall reducing huge costs historically faced by manufacturers.
745	Operations Research	MECH4103	Employability & Skill Development - Understanding and acquiring the knowledge for problem solving & decision making from various alternatives from a large number of constraints must be learned by the students for selecting the least risk with an optimum plan in the current business scenerio.
746	IC Engine Lab	MECH4111	Employability & Skill Development - Practical knowledge on (i) working principl of IC engines with their operational characteristics and (ii) various components like valves, fuel injectors etc. will be an added advantage for students working in automotive industries.
747	Machining & Machine Tools Lab	MECH4112	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools lke lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various componets. This skill will help students to select/ design/ maintain machine tools in an industry.
748	Industrial Training Evaluation	MECH4131	Employability & Skill Development - Get an idea of industrial set up and its associated complexity, evaluate the classroom knowledge against the real life application, learn the sequence of activities that lead to a finished product from the raw material and learn about activities other than design and manufacturing that are necessary for producing the goods and services.
749	Computational Methods in Engineering	MECH4142	Employability & Skill Development - Different numerical methods and its application on engineering are learned and apply them in R&D sector or research
750	Quantity Production Method	MECH4143	Employability & Skill Development - More than 60% of the manufacturing Industries have restructured their factories or the manufacturing systems to become lean producers (less wastages) , making goods of superior quality ,cheaper, faster in a flexible way.Students shoul be well versed on the same & to be responsive in their respective Industrial environment.
751	Computational Fluid Dynamics	MECH4144	Employability & Skill Development - Students will get job opportunities in various emerging technologies including R&D sectors.
752	Quantitative Decision Making	MECH4181	Enterpreneurship : Understand the meaning and appreciate importance of Quantitative Decision Making.
753	Project I	MECH4191	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
754	Advanced Manufacturing Lab	MECH4211	Employability & Skill Development - Students program and run most advanced CNC Lathe, Electro Discharge Machine and Robot. They will be in a position to successfully run such machines present in modern industries.
755	Design of an Industrial Product	MECH4221	Employability & Skill Development - Develop manufacturing drawings of the components and General Assembly drawing of the complete product/ system along with its Bill of Material and this very much helpful for direct employability.
756	Comprehensive Viva Voce	MECH4231	Employability & Skill Development - This will be an evaluation of the student's overall mechanical engineering concept and ability to grasp all the 8 semester courses undertaken by the student and it is directly helpful for employability.
757	Mechanical Handling of Materials	MECH4281	Employability : To Interpret the importance of materials handling
758	Aerodynamics	MECH4282	Employability : to Learn fundamental physical and analytical principles of aerodynamics, Apply the knowledge of aerodynamics in design of turbo-machine blades, vehicles etc
759	Project II	MECH4291	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.
760	Energy Management and Audit	REEN6101	Employability & Skill Development - Student can learn a systematic, one-time procedure and a long-term strategy dedicated to continuous improvement and energy efficiency. They can learn the methodology of energy audit process and its classification. Student can also classify industry from energy consumption aspect.
761	Renewable Energy III	REEN6102	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
762	Renewable Energy Laboratory	REEN6111	Employability & Skill Development - Students will learn the skill to handle equipment that can produce and measure renewable energy from sun, wind and biomass.
763	Energy Transmission Technology	REEN6141	Employability & Skill Development - Student will learn how energy is transmitted over long and short distance. They will also understand the power grid management. Student will learn how renewable power can be fed to the grid
764	Energy Trading and Pricing	REEN6142	Employability & Skill Development - Student can learn about energy market organisation and design. They can get an exposure on how energy is traded globally and how it is priced

**Mapping of courses to employability / entrepreneurship / skill development for the year 2019-20**

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	Advanced Digital Signals and Systems	AEIE5101	Employability & Skill Development - Design digital FIR and IIR filters according to the given specification. Realize a digital filter structure from its transfer function. Understand theory of multirate DSP and adaptive filtering techniques, solve numerical problems. Understand theory of prediction, solution of normal equations and methods of spectral estimation.
2	Programming Language for Embedded IOT system	AEIE5102	Employability & Skill Development - Understand the key features, design challenges and related to IoT systems. Learn the architecture of NodeMCU and develop IoT systems using it. Demonstrate working knowledge of Micro Python. Design an IoT system with functional requirements for hardware components including processor, networking components and sensors. Develop an IoT system with along with applications of cloud.
3	Research Methodology and IPR	AEIE5103	Employability & Skill Development - Understand research problem formulation and its solution approaches. Analyze research related information. Learn how to write report and research proposal following research ethics. Judge importance of intellectual property and patent rights and learn the process of obtaining them.
4	Micro-Electronic Devices and Circuits	AEIE5131	Employability & Skill Development - Detail analysis Op-Amp circuits to understand loading effects in application circuits. Select MOS transistor as per datasheet parameters to design a simple current mirror. Analyze the DC performance of single-stage analog amplifiers containing these circuit elements. Compute terminal voltage and current characteristics for MOS transistors under a variety of conditions.
5	Medical Instrumentation	AEIE5132	Employability & Skill Development - Understand the physiology of biomedical systems and different methods in the design of biomedical instruments. Learn the different methods of medical imaging systems, concepts related to the operations and analysis of biomedical instruments. Apply it in the design of different assisting therapeutic and diagnostic medical devices.
6	Instrumentation and Industrial Automation	AEIE5133	Employability & Skill Development - Learn various process variable measuring instruments. Learn to read and draw the P&I diagrams. Apply the knowledge of various control methodologies in industrial automation. Learn industrial signal transmitter and safety in handling industrial instruments. Explain the process automation and architecture.
7	Mechatronics	AEIE5141	Employability & Skill Development - Integrate mechanical, electronics, control and computer engineering to model mechatronic systems. The complete design building, interfacing and actuation of a mechatronic system for a set of specifications. Learn different types of interface buses, communication networks, A/D conversions, DAS, data recording and logging etc required for mechatronic systems.
8	Advanced Digital Control Systems	AEIE5142	Employability & Skill Development - Principles for design of Digital Control system and will gain knowledge of implementing for industrial applications. Developing algorithms for applications based various digital controllers and analysis of discrete control systems using various time and frequency domain tools. Aware of advanced understanding of adaptive and self tuning principles and applications.
9	Advanced Optical Instrumentation	AEIE5143	Employability & Skill Development - Learn the techniques of communications using optical fiber. Learn the structures and performance of photo detectors (like photo diode, PIN diode, APD etc). Explain the techniques of measurement of distance, length, velocity, acceleration, current, voltage using laser. Acquire knowledge on basic principle of holography and its uses in different fields such as nondestructive testing, medical field etc.
10	Digital Signal Processing LAB	AEIE5151	Employability & Skill Development - MATLAB programs to determine time domain properties of the discrete time signals. Determine FFT and DFT of a discrete time signal. Design and implement FIR and IIR digital filters in MATLAB. Implement real time FIR and IIR digital filters and FFT algorithm using DSP kit like C6713 DSK.
11	Programming Language LAB	AEIE5152	Employability & Skill Development - Design and conduct experiments with input and output devices using a Node MCU. Perform programming with IIoT cloud service using low power microcontrollers and Raspberry Pi. Interface a sensor with Node MCU for IoT applications. Implement Android Things app using Java ME/Kotlin. Perform programming with MicroPython.
12	Embedded Systems	AEIE5201	Employability & Skill Development - Learn the architecture of AVR microcontrollers and develop embedded systems using it. Demonstrate working knowledge of embedded systems software with Linux and Python. Complete design of an embedded system with functional requirements for hardware and software components including processor, networking components and sensors, along with applications, subsystem interfaces and middleware.
13	Process Control System Design	AEIE5202	Employability & Skill Development - Process mathematical modeling and study the techniques of modeling. Understand the process dynamics in general and analyze it in few industrial applications. Design process control system applying different linear, non-linear and soft-computing techniques. Employ proper system identification technique to identify unknown system and acquire knowledge of computer control.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
14	Micro Sensor Science and Techonology	AEIE5231	Employability & Skill Development - Apply the concepts of IC fabrication in sensor as well as semiconductor technology. Understand the micromachining processes (Bulk/ Surface /LIGA) and fabrication steps viz. deposition (CVD, Stuttering/ epitaxy, ion implantation etc.), lithography, etching (dry/wet, RIE/ DRIE) of micro-sensors. Understand the packaging/ testing of microsensors along with signal conditioning circuitry in real time systems. Analyze the application of smart sensors in IoT and medical/ aro-space/telecommunication/ instrumentation fields.
15	Advanced Power Electronics	AEIE5232	Employability & Skill Development - DC Drive operations and implementations. Compare between performance of Voltage source and current source inverters. Differentiate among multi-level inverters. Analyze speed and position control methods of DC motors. Explain control of induction motors. Explain control mechanisms and models of HVDC and HVAC Transmission lines
16	Instrumental Methods of Analysis	AEIE5233	Employability & Skill Development - Different spectroscopic methods and understand their use. Identify different components of spectrometers and acquire knowledge about their functioning. State the fundamental properties of different types of chromatography and able explain their working principle and application. Give comprehensive idea about Electron microscopy.
17	Digital Image Processing	AEIE5241	Employability & Skill Development - Learn how images are formed, sampled, quantized and represented digitally and processed by discrete, linear, time-invariant systems. Apply transformation algorithms such as DFT, DCT, Discrete Sine, Walsh, Hadamard, Slant, Haar, KLT, SVD and Wavelet transform to any given image. Compress a given image by applying lossy and loss less image coding techniques. Perform image enhancement, restoration, morphological operation and segmentation of a given image. Analyze a given image by extracting features from it and by using object recognition techniques.
18	Statistical and Bio-signal Processing	AEIE5242	Employability & Skill Development - Case study-I: Application to biomedical signals: Analysis of continuous EEG signals, Single channel analysis; Multiple channel analysis: Mapping; Elimination of artifacts; sleep EEG analysis. Case study-II: Application to biomedical signals: Analysis of continuous ECG signals: Measurements, Processing of ECG, Artifact removal, Statistical methods and models for ECG; Heart rate variability: Time-domain methods of HRV analysis; Frequency-domain methods of HRV analysis.
19	Industrial Internet of Things	AEIE5243	Employability & Skill Development - Determine the IIoT architecture and application in various fields. Outline the concept of NB-IoT and LoRa. Realize the importance of security and privacy issues in IIoT. Interpret the concept of IIoT and M2M. Point out the applications of IIoT in various industries.
20	Embedded Systems LAB	AEIE5251	Employability & Skill Development - Perform programming with PORT, ADC and I2C bus registers in an AVR microcontroller. Interface a sensor with an AVR microcontroller and monitor its input by displaying the measured value in a PC. Implement USB communication between a Raspberry Pi and Arduino. Perform interfacing with GPIO of Raspberry Pi.
21	Process Control System Design Lab	AEIE5252	Employability & Skill Development - Understand the activity and importance of Boiler Drum in an industry. Calibrate and test the instruments. Simulate, tune and control different processes. Understand principle of modeling and control through experiments.
22	Term Paper and Seminar	AEIE5293	Employability & Skill Development - Understand of contemporary/emerging technology for various processes and systems. Learn how to write a technical document. Demonstrate the ability to deliver technical seminar. Interact effectively with audience to share knowledge and views.
23	Chemistry	CHEM1001	Employability & Skill Development - Development of New Material For Novel Application. Understanding the operating principles and reaction involved in batteries and fuel cells and their application. Knowledge of synthesizing Nanomaterials and their applications in industry, carbon nano tube technology is used in every industry now-a-days. Ability of synthesizing bio fuels as a renewable and environment friendly alternative source for natural fuel.
24	Chemistry Lab	CHEM1051	Employability & Skill Development - Able to determine the alkalinity, chloride ion present and total hardness and amount of calcium and magnesium in a given water sample. Able to develop titration skill. Chemistry teaches useful skills. Because it is a science, learning chemistry means learning how to be objective and how to reason and solve problems. Helps you to understand current events, including news about petroleum, product recalls, pollution, the environment and technological advances
25	Programming for Problem Solving	CSEN1001	Employability & Skill Development - It gives the basic knowledge of programming, teaches how to write loops, use pointers in C, in short teaches for the first time how to code in procedural programming language. It is basically the bread and butter of a computer science engineer.
26	Programming for Problem Solving Lab	CSEN1051	Employability & Skill Development - Teaches them the basics of programming from scratch using C. So this is the single most important subject who chooses a programmer's job in life, and the majority of the students choose to do so.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
27	Advanced Data Structures	CSEN5101	Employability & Skill Development - Teaches the advanced Data Structures such as skip list, quad tree, range tree, kd tree along with some basic data structures. For all the new-age companies that need a programmer to code up randomized algorithms and know super-fast search techniques, this is a must course.
28	Research Methodology and IPR	CSEN5102	Employability & Skill Development - Teaches the basic principles of research and ethical values that are required to carry forward a research. Also teaches how to protect intellectual property, the patent laws and their philosophy. These are very much required in any R&D based company.
29	Machine Learning	CSEN5131	Employability & Skill Development - This is an advanced course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc. Right now whole computation system is data driven and machine learning helps students to use it as a tool to provide data-driven services.
30	Advanced Wireless and Mobile Networks	CSEN5132	Employability & Skill Development - This advanced course helps the students to learn the working principles of mobile computation and wireless communication from scratch and also introduces the advanced topics like 4G, 5G networks and their associated security issues and their solutions. In this modern era of high mobile penetration, this is very much required by any mobile company.
31	Introduction to Intelligent Systems	CSEN5133	Employability & Skill Development - This is an one-level up course from the undergraduate AI course, where the students learn from scratch the various modern day tools like genetic algorithm, fuzzy logic, neural networks etc. These all are very much required in AI driven companies.
32	GPU Computing	CSEN5134	Employability & Skill Development - This course helps students to learn how computation power can be increased by introducing GPU in normal computing device. Today all AI, Machine learning or Bigdata based companies requires huge amount of computing power, a student learns how all these can be smoothly managed after learning this course.
33	Image Processing	CSEN5135	Employability & Skill Development - Any company working in computer vision (such as remote sensing, pattern matching) need students who have attended this advanced course.
34	Data Science	CSEN5141	Employability & Skill Development - This Course will help the students to know how to handle data, how to cure it, process it and also store it efficiently. All the concepts they will learn like Supervised, Un-supervised learning, Data Processing, Clustering, Classification are going to help them after they have studied this course in their work as Data Engineers.
35	Distributed Systems	CSEN5142	Employability & Skill Development - They get the knowledge and concept of distributive operating systems and their working principle, which is very much required in today's jobs requiring distributed implementation of the software.
36	Wireless Sensor Networks	CSEN5143	Employability & Skill Development - This is basic course that deals with how devices can communicate effectively and relentlessly without any noise and also their working principles. These all are very much required in this modern era of IOT devices.
37	Digital Forensics	CSEN5144	Employability & Skill Development - This course helps the students to deal with identifying all digital grievances and their management, which is very much required when every thing is digitalized.
38	Computational Biology	CSEN5145	Employability & Skill Development - Students get a knowledge how computation can be embedded in bio science. From DNA sequencing to pattern matching, evolutionary clustering all complex computations will help the students to get a job in pharmaceutical companies or biological research labs.
39	Machine Learning Lab	CSEN5181	Employability & Skill Development - It complements the theory course in Machine Learning and student learns various tools like tensorflow, azure and other python based tools to operate on various data-driven real life problems.
40	Advanced Wireless and Mobile Networks Lab	CSEN5182	Employability & Skill Development - Various tools like OTCL, Qualnet Network Simulator all complements the theory course and helps students to deal with many real time problems. These all help them in industry also.
41	Introduction to Intelligent Systems Lab	CSEN5183	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
42	GPU Computing Lab	CSEN5184	Employability & Skill Development - Students will be dealing with parallel programming using CUDA. It will help them in industries where huge amount of computations are required.
43	Image Processing Lab	CSEN5185	Employability & Skill Development - It complements the theory course in image processing and student learns various matlab and python based tools to do computations on various type of images, which is a must before joining any company in the computer vision or handling image processing projects.
44	Advanced Algorithms	CSEN5201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement implementing complex algorithms and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
45	Soft Computing	CSEN5202	Employability & Skill Development - Any project that requires to solve some NP-complete (hard) problems in real time, which are not solvable in polynomial time at all need such a course.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
46	Data Preprocessing and Analysis	CSEN5231	Employability & Skill Development - Any Data Science or Machine learning based project in the industry requires processed, structured data and this course actually helps the students to understand how to extract useful meaningful data from an unorganized unprocessed data.
47	Secure Software Design and Enterprise Computing	CSEN5232	Employability & Skill Development - This course helps the students to know the procedure to build secured software and also to deploy them in various platforms. This knowledge is pretty much required in every Software MNCs.
48	Computer Vision	CSEN5233	Employability & Skill Development - This course helps the students to learn from scratch like detecting edges to advanced levels like using KNN, ANN models to recognise video as well as images. All these features are very much desirable for Video and image processing industries.
49	Theory of Computation	CSEN5234	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course.
50	Computational Geometry	CSEN5235	Employability & Skill Development - This advanced topic deals with various geometric approximations as well as various range searching techniques, which are very much useful for not only in EDA based companies as well as required for any companies developing search engines.
51	Human and Computer Interaction	CSEN5241	Employability & Skill Development - This topic is very useful for those companies which focus on designing front-end GUI design. So this a must course for students who want to be placed in Software MNCs.
52	Graph Algorithms	CSEN5242	Employability & Skill Development - This course helps in a handful of companies that builds software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
53	Cloud Computing	CSEN5243	Employability & Skill Development - The days of proprietary infrastructure is fast receding and in practice more and more companies are becoming confident to keep their valued data on cloud. Under this scenario, many service-oriented companies also get huge projects that require a knowledge of cloud computing in the background and also have dedicated teams looking after cloud aspects. This course help our students to target those jobs.
54	Algorithms for VLSI CAD	CSEN5244	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques that are required to build a chip in a precise manner, which is done by a robotic arm and at the nano meter scale, so precision really matters. All these skills are very much required in a multi-national EDA company.
55	Spatial Informatics and GIS	CSEN5245	Employability & Skill Development - This course is very much required by students working in remote sensing and GIS companies for building MAPs to find natural resources.
56	Advanced Algorithms Lab	CSEN5251	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
57	Soft Computing Lab	CSEN5252	Employability & Skill Development - Students get a chance to do some projects, where various soft computing techniques like fuzzy logic, genetic algorithms and other evolutionary algorithms are learnt through real-life problems.
58	Term Paper and Seminar	CSEN5293	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry. It also gives an exposure to the latest research domains that they are going to explore in depth during their final year projects.
59	Disaster Management	DIMA5116	Employability & Skill Development - Demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives. Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations. Critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in.
60	Basic Electronics	ECEN1011	Employability & Skill Development - Principles of operation of semiconductors, ideas about the building blocks like diodes, transistors, FETs, OPAMPS, rectifier circuits, amplifier, distortion, biasing etc. Analysing various electronic circuits and devices. Design different application specific circuits associated with diodes operating both in forward and reverse bias. Analyze various biasing configurations of Bipolar Junction Transistor and categorize different biasing circuits based on stability. Design and implement various practical purpose electronic circuits and systems meant for both special purpose and general purpose and analyze their performance depending on the type of required output and subsequently the applied input.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
61	Basic Electronics Laboratory	ECEN1061	Employability & Skill Development - This course gives a hand on experience handling of devices, biasing properly, plotting graphs to understand behaviour of devices, handling of instruments to measure parameters.
62	Antenna and Radiating Systems	ECEN5101	Employability & Skill Development - Students will come to know about Antenna – Radiation, VSWR, aperture and their importance, Types of antennae and antenna arrays including microstrip antenna, Testing principles of antennae, EMI and EMC and associated hazards, Different propagation phenomena and QoS of radio links and their analysis which in turn will enhance their Employability.
63	Wireless and Mobile Communication	ECEN5102	Employability & Skill Development - The students will understand the challenges of wireless and mobile communication. They will be able to analyse the factors like fading, SNR. The students should be able to explain the working of a cellular system- both GSM and CDMA. They will be able to analyse performance of cellular and other wireless networks enhancing their employability in communication Industry and allied services
64	Research Methodology and IPR	ECEN5103	Employability & Skill Development - Students will be able to Understand research problem formulation. They will be able to analyze research related information, understand the ultimate importance of ideas, concept and creativity. they will also understand Importance of IPR for individuals and nations. Such knowledge definitely enhances skill development for research which is in alignment with Make in India concept.
65	Wireless Ad Hoc and Sensor Networks	ECEN5131	Employability & Skill Development - Students will be able to analyze a situation and interpret a data in ad hoc networks. Students will acquire knowledge to learn and apply modeling based approach through the extensive use of simulator tools. Students will be able to understand and develop ability to participate in research work. They will be able to apply suitable algorithm for a route. The students will understand the security requirements for networks enhancing employability of students.
66	Photonics and Optical Communication Networks	ECEN5132	Employability & Skill Development - Students will know about the different modes, devices, detectors, amplifiers using optical fiber communication. They will have knowledge about various types of systems with their strengths and weaknesses. The students will know about different types of optical networks. They will understand the requirements of repeaters and amplifiers and their parameters. The students will be able to choose type of fiber for typical applications. They will be able to integrate the fiber optics with other networks. Such knowledge will help them in getting placed in Communication industry.
67	Statistical Process in Communication	ECEN5133	Employability & Skill Development - Students will know about the different matrices and filters used in communication systems. They will have knowledge about modeling of signals. The students will know about techniques of detection. The students will be able to differentiate between filters. They will learn about signal properties and processes. The students will learn about stochastic models for possible application and hence help in skill development.
68	Satellite Communication and applications	ECEN5141	Employability & Skill Development - Students will know about the orbits and different modules of a satellite. They will have knowledge about satellite links and various factors affecting the QoS of the links. The students will be able to explain the differences between TDMA, FDMA, DAMA etc. access techniques. They will be able to explain VSAT. GPS. The students will be able to analyse causes of interference and solution. They will understand GPS working. Such knowledge leads to enhancement in employability.
69	Multimedia Communication	ECEN5142	Employability & Skill Development - Students will know about the different media classification, media characteristics. They will have knowledge about various types of compression coding and memory systems. The students will know about different architectures used and media modeling. They will learn about management of resources and project management. The students will be able to analyse synchronization problems. They will be producing films with confidence which indicates direct relation to employability
70	Cryptography and Network Security	ECEN5143	Employability & Skill Development - Students will know about the basics and different standards used. They will have knowledge about important cryptography techniques. The students will know about algorithms applied for encryption. They will acquire knowledge about security challenges and some concepts in web security. The students will understand security systems using VPN and Firewalls. They will be able to develop new algorithms. Such skill sets will enhance their employability in all the IT companys.
71	Antenna and Radiating Systems lab	ECEN5151	Employability & Skill Development - Students will know about the different experimental set-ups to measure various parameters related to antennae. They will study radiation pattern for antenna, will acquire practical knowledge about Smith chart and stub matching. The students will also learn to study spectral analysis of signals enhancing their employability.
72	Wireless and Mobile Communication lab	ECEN5152	Employability & Skill Development - The students will be able to correlate different theories of wireless communication and fiber optics with practical experiments. They will understand operations of repeater station, GPS and GSM cellular systems. They will learn the procedures for testing radio parameters. Students will learn working of fiber optic links. Such knowledge will enhance their employability in Communication Industry.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
73	Advanced Digital Communication Techniques	ECEN5201	Employability & Skill Development - Students will learn about the transmission techniques, synchronization in digital communication. They will know about the modulation schemes, OFDM etc. The students will acquire knowledge about the CDMA in details. The students will have clear idea about estimation and detection schemes. They will be able to design reliable channel codings. They will understand the differences between coding schemes. The students will be able to analyse the digital communication quality enhancing their employability in Communication Industry
74	Advanced DSP and applications	ECEN5202	Employability & Skill Development - Students will know about the different transforms applied in signal processing. They will have knowledge about LTI systems, Digital filters. The students will know about multi- rate processing, wavelet transforms. They will solve problems on FFT and DFT. The students will know about the comparison of filters. They will be able to apply the knowledge of wavelets in developing advance systems leading to start up opportunities and entrepreneurship
75	Telecommunication Systems and Engineering	ECEN5231	Employability & Skill Development - Students will know about the different telephone networks, ADSL etc. They will have knowledge about digital telephone systems and local area networks- features and parameters. The students will be aware of ISDN and its operation. They will be able to calculate the efficiency of a tel network. They will know about the various 802.11 standards and their applications. They will know about ATM operation and ATM networks leading to skill development for communication Industry.
76	Image Processing and Pattern Recognition	ECEN5232	Employability & Skill Development - Students will know about the basics of image processing, spatial filtering etc. They will have knowledge about techniques applied for pattern recognition. The students will know about image clustering and face recognition. They will be able to classify and predict. The students will acquire knowledge about identifying objects correctly. They will earn the potential to develop new applications which facilitates entrepreneurship and supports the concept of self reliant nation
77	Cognitive Radios and networks	ECEN5241	Employability & Skill Development - Students will develop an ability to analyze a performance in a radio net. They will develop an ability to learn and apply modular approach in design. They will Develop a passion to pursue next generation wireless communication. They will be able apply correct technique in locating radios in networks. This knowledge will help them in skill development for Communication Industry.
78	Microwave Measurement and Instrumentation	ECEN5242	Employability & Skill Development - Students will be able to analyse instruments like spectrum analyzer, Vector Network analyzer etc. They will be able to measure microwave power. They will acquire an Idea about techniques to measure power. They will develop the capability to analyse problem in measurement procedure. Such skill sets will enhance their employability in Rf Industry
79	Design of Communication Equipments and Systems	ECEN5243	Employability & Skill Development - Students will be able to apply knowledge in designing electronics for communication engineering. They will have the ability to learn and apply modelling based approach through the extensive use of simulation tools. They will be able to.Design of complex PCBs with Clear perception about testing of parameters. Consequently, they will be able to have their own start up supporting national vision of self reliant India.
80	Advanced DSP and applications lab	ECEN5252	Employability & Skill Development - The students will acquire understanding of sampling, convolution , Z-transform, DFT and FFT and their applications. They will be able to design Filters – IIR and FIR which in turn helps in developing skills for Communication Industry
81	Design and Simulation lab	ECEN5253	Employability & Skill Development - Students will be able to Design graphical user interfaced models of various communication systems/ subsystems with the help of suitable advanced software e.g. MATLAB/ OCTAVE/LABVIEW/ NS/ PUFF/ IE3D/ ANSOFT/ HFSS/ CST/ QUALNET/ MICROWAVE OFFICE etc. for detailed study of their operating principle and their performance vis-a-vis practical limitations like, channel bandwidth, noise, attenuation etc. Hence enhances their employability
82	Basic Electrical Engineering	ELEC1001	skill development in basic concept of DC and AC electric circuits Operate DC Machines and analyze Starters and speed control of DC motors. Analyze single and three phase AC circuits. Know the operation of single phase transformers and three phase induction motors.
83	Basic Electrical Engineering Lab	ELEC1051	Employability & Skill Development - Make electrical connections by wires of appropriate ratings. Understand the application of common electrical measuring instruments and the basic characteristics of different electrical machines. A student while working in any shop floor will face several electrical circuit/machines (both AC and DC). Hands on training or a preliminary idea about the working principle and the charateristics of such circuits/ machines will lead to an incresed productivity in the shop floor.
84	Communication forProfessionals	HMTS1011	Employability & Skill Development - It helps the students to write formal letters for business purposes as well as reports effectively in English, which is very much required in all possible multi-cultural, globalized work enviroments that they might face.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
85	Professional Communication Lab	HMTS1061	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Helps in Interpersonal communication. Communicate in an official and formal environment. Effectively communicate in a group and engage in relevant discussion. Engage in research and prepare presentations on selected topics. Understand the dynamics of multicultural circumstances at workplace and act accordingly. Organize content in an attempt to prepare official documents. Appreciate the use of language to create beautiful expressions.
86	Business English	HMTS1202	Employability & Skill Development - It helps the students to communicate effectively in english that helps in all possible job interviews they face. Helps in Interpersonal communication. Organizational Communication: Agenda & minutes of a meeting, notice, memo, circular, Project Proposal, Technical Report Writing, Organizing e-mail messages, E-mail etiquette, Tips for e-mail effectiveness and Levels or Channels of Communication.
87	Language Lab	HMTS1252	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Helps in Interpersonal communication. Learn Voice Modulation, Accent training. Conversational Skills/Spoken Skills Writing with a purpose---Convincing skill, argumentative skill/negotiating Skill (These skills will be repeated in oral skills). Writing reports/essays/articles logical organization of thoughts.
88	Constitution of India	INCO5117	Employability & Skill Development - Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective. To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.
89	Mathematics-I	MATH1101	Employability & Skill Development - The concepts Linear algebra that is given helps in all jobs that uses Machine Learning. Apart from that, the knowledge of Calculus helps all students who choose their career in the domain of Image Processing.
90	Mathematics II	MATH1201	Employability & Skill Development - The basics of Graph Theory that is introduced here is a must for all the engineers that get employed in any of the knowledge-based industries. Also a whole lot of students go for companies working in map-based algorithms like Mapline, Uber, OLA etc. for whom this is a must course. The basic probability and numerical methods are an introductory course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
91	Advanced Discrete Mathematics and Statistical Methods	MATH5101	Employability & Skill Development - This advanced topic deals with Number Theory, which introduces to the students what they ultimately need in a group/company working in Cryptography or Data Security. Also the other things that are taught like Logic, graph theory, probability statistics are very much essential for anybody working in the industry, whatever be the domain.
92	System Administration Using Linux	MCAP3150	Employability to work as system administrator in Linux environment.
93	Advanced Java	MCAP3151	Employability in the field of Advanced Java programming.
94	Image Processing	MCAP3152	Skill development by understanding the basic theory and algorithms and mathematical transforms necessary for image processing.
95	Advanced Java Lab	MCAP3156	Employability in the field of java programming and web development.
96	Image Processing Lab	MCAP3157	Skill development to conduct image enhancement techniques, image restoration procedures, image compression procedures.
97	Cryptography And Network Security	MCAP3160	Employability to design security applications in the field of Information technology.
98	Mobile Computing	MCAP3170	Skill development by understanding and analyzing the difference between Mobile Computing and Wireless Networking.
99	Soft Computing	MCAP3171	Skill development by understanding and analyzing soft computing concepts, technologies and their role in problem solving.
100	Compiler Design	MCAP3182	Skill development to understand the overall hierarchy of formal instructions from source code to machine code.
101	Ecommerce And Erp	MCAP3183	Entrepreneurship with understanding the Hardware and Software Technologies for E-commerce and payment systems.
102	Minor Project And Seminar	MCAP3195	Skill development through minor project and seminar.
103	Comprehensive Viva	MCAP3221	Skill development for comprehensive knowledge on Computer Applications.
104	Major Project And Seminar	MCAP3295	Skill development through major project and seminar.
105	WORKSHOP /MANUFACTURING PRACTICES	MECH1051	Employability & Skill Development - Hands on training on machining exposure (Lathe, shapping, milling, drilling etc) and manufacturing procedures (Casting, welding etc.) are helpful for direct bearing on employability.



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
106	Engineering Graphics & Design	MECH1052	Employability & Skill Development - Engineering drawing is the essential language to the engineers and this course help the students to develop themselves as an designer which is very much essential for employability. Engineering Graphics enhances the employability in design/ construction/ interior designing field. Acquaintance with different drafting equipment & accessories; Gain the concept of scale of drawing. The concept and skill of different types of projections of engineering drawing is practiced. Learn engineering drawing software (CAD)
107	Personality Development through Life Enlightenment Skills	PDL5118	Employability & Skill Development - Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life. The person who has studied Geeta will lead the nation and mankind to peace and prosperity. Study of Neetishatakam will help in developing versatile personality of students.
108	Physics I	PHYS1001	Employability & Skill Development - Explain the working principle of LASER, and apply the knowledge in different lasing system and their engineering applications in holography. Imparting the essence and developing the knowledge of controlling distant object like satellite, data transfer through optical fiber, implication of laser technology, handling materials in terms of their electrical and magnetic properties etc.
109	Physics Lab I	PHYS1051	Employability & Skill Development - To gain practical knowledge by applying the experimental methods to correlate with the Physics theory. To learn the usage of electrical and optical systems for various measurements. Apply the analytical techniques and graphical analysis to the experimental data. Understand measurement technology, usage of new instruments and real time applications in engineering studies. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group.
110	Sanskrit for Technical Knowledge	SANS5120	Employability & Skill Development - Learning of Sanskrit to improve brain functioning. Learning of Sanskrit to develop the logic in mathematics, science & other subjects. Enhancing the memory power. The engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature.
111	Digital VLSI IC Design	VLSI5101	Employability & Skill Development - Students will learn CMOS Circuit Design, Layout Design, VLSI Design Methodology, HDL Coding, EDA Logic Synthesis and P & R flow which will enable their employability and skill development
112	Embedded Systems Design	VLSI5102	Employability & Skill Development - Students will learn Embedded System Design Methodology, Micro controller Design, Embedded Memory Architecture and I/O Configuration which will enhance their employability and skill development
113	DSP For VLSI System	VLSI5131	Employability & Skill Development - Students will learn DSP Algorithm, Signal and Data Flow Graph, Pipeline and Parallel Processing, SISO, MIMO System which will enable their employability and Skill Development
114	VLSI IC Fabrication	VLSI5132	Employability & Skill Development - Students will learn various fabrication steps and methods of basic and advanced Technology which will enhance their Skill development
115	CAD of Digital System	VLSI5141	Employability & Skill Development - Students will learn graph theory, data structures and algorithm needed for CAD automations, they will learn Physical Design Optimization on Partitioning and Floorplan, High level and Logic Level Synthesis and Verilog Modeling which will enhance their employability and skill development
116	Modelling of VLSI Device	VLSI5142	Employability & Skill Development - Students will learn BJT, MOSFET Modeling, Short Channel Effect, MOS Scaling and Industry Standard Compact Modeling which will enhance their employability and skill development
117	Digital VLSI IC Design Lab	VLSI5151	Employability & Skill Development - Students will do hands on practice on Industry Standard Cadence Virtuoso Schematic editor, Spectra Circuit Simulation, Layout Edit and Verifications, Pre Layout and Post Layout Simulation and Analysis which will enable their employability and skill development
118	Embedded Systems Design Lab	VLSI5152	Employability & Skill Development - Students will do hands on practice on Industry Standard Xilinx Vivado Simulator, VHDL coding and Simulation/Verification, Finite State Machine coding using HDL, Test Bench HDL coding for RTL Verification, FPGA synthesis, Place & Route and Hardware Programming, ARM Cortex based Software/Hardware which will enable their employability and skill development
119	Analog VLSI IC Design	VLSI5201	Employability & Skill Development - Students will learn MOS-based analog VLSI sub-circuits, relevant small-signal equivalent circuit models, they will learn basic concepts in RF design and the geometry, models of passive devices used in the RFIC, they will learn data converters, switched-capacitor circuits, operation of the oscillator circuits. All these learnings will enhance their employability and skill development
120	VLSI Design, Testing and Verification	VLSI5202	Employability & Skill Development - Students will learn embedded Memory Design in VLSI Chip, VLSI Interconnect Design, Industry Standard STA (Static Timing Analysis) Method, Set-up and hold Checks for Timing Verification, process variation and Clock skew concepts and Si Testing/Debug Methods which will enable their employability and skill development

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
121	Memory Technologies	VLSI5231	Employability & Skill Development - Students will learn SRAM Bit-cell Design, SRAM Array architecture and periphery Circuits, DRAM Bit cell Design, DRAM Array architecture, periphery Circuits and Controller, various ROM Design and Future Memory Technologies like MRAM, FRAM which will enable their employability and skill development
122	Low Power VLSI Design	VLSI5232	Employability & Skill Development - Students will learn CMOS Dynamic Power Dissipation & Reduction Techniques, CMOS Standby (leakage) Power Dissipation & Reduction Techniques, Short Circuit Power Reduction Techniques, Embedded Memory Power Reduction Techniques, System and Architecture level Power Reduction Techniques which will enable their employability and skill development
123	Advanced VLSI Processor	VLSI5241	Employability & Skill Development - Students will learn instruction set architecture (ISA), CISC and RISC Architecture, DSP Processor Architecture, Accelerator, Multi-Threaded Processor, Processor cores in SOC Design which will enhance their employability and skill development
124	Advanced Nano Devices	VLSI5242	Employability & Skill Development - Students will learn various leakage phenomena in advanced MOS, High K Plus Metal Gate Technology, SOI MOS device, FinFET Devices like DGMOS, Tri-gate, Hetero-Structures, CNT, Graphene Device which will enhance their employability and skill development.
125	Analog VLSI IC Design Lab	VLSI5251	Employability & Skill Development - Students will do hands on practice on Analog VLSI sub-circuits and amplifier circuits, layout for analog VLSI sub-circuits and circuits, special circuits namely data converters, practical switched-capacitor circuits which will enhance their employability and skill development
126	VLSI Design, Testing and Verification Lab	VLSI5252	Employability & Skill Development - Students will do hands on practice on Critical Path Modeling and Analysis, Sizing in Digital Design, CMOS Design of Combinational Circuits and Modules, CMOS Design of Sequential Circuit, Setup and Hold Check, Layout of a system, DRC, LVS, Extraction using Industry Standard Cadence Virtuoso/Assura, Back-annotation and Post Layout Timing Analysis using Industry standard Spectra Circuit Simulator which will enhance their employability and skill development.
127	Stress Management by Yoga	YOGA5119	Employability & Skill Development - Develop healthy mind in a healthy body thus improving social health. Improve efficiency.
128	Electrical and Electronic Measurements	AEIE2204	Employability & Skill Development - Choose appropriate bridge for measurement of resistance, capacitance and inductance. Select electronic voltmeters suitable for typical measurements and explain the construction of cathode ray tube, circuits of oscilloscope time base, CRO probes, dual trace oscilloscope and applications. Analyze the working of different types of digital voltmeters, digital frequency meter and digital display units. Determine the quality of a coil, capacitor using Q meter.
129	Analog Electronic Circuits	AEIE2101	Employability & Skill Development - Design and analyze BJT amplifiers for small and large signal. Design and compare between different types of Oscillators to meet the specified needs with appropriate consideration. Design, analyze and understand the application of different types of multivibrators with and without IC 555. Analyze and design analog electronic circuits using discrete components with specified needs for the betterment of human living.
130	Sensors and Transducers	AEIE2102	Employability & Skill Development - Measure various industrial variables such as temperature, pressure, level, flow etc. Understand the operational conditions, range and limitations of sensors and transducers. Understand the interfacing of the sensors with the electrical circuits in measuring and controlling devices. Use the sensors in IoT based applications.
131	Circuit Theory and Network Analysis	AEIE2103	Employability & Skill Development - Identify, formulate, and solve engineering problems in the area circuits and systems. Acquire skills in analyzing electrical measuring devices, analog electronic circuits, power electronic circuits. Analyze and synthesize RL, RC and RLC networks. Design an electric system, components or process to meet desired needs within realistic constraints.
132	Material Science and Technology	AEIE2111	Employability & Skill Development - Explain the properties and structure of engineering materials. Make use of phase diagrams to predict microstructures and also to understand precipitation hardening. Compare & Evaluate the processing of engineering materials. Choose the proper engineering material for defined field of applications with economic, environmental and societal considerations. Determine the importance of material properties in engineering design.
133	Analog Electronics Lab	AEIE2151	Employability & Skill Development - Set up testing strategies and select proper instruments. Design different kind of electronic circuits appropriately to obtain the best possible circuits that can be applied to any electronic systems. Practice different types of wiring and instruments connections keeping in mind technical, economical, safety issues. Evaluate the use of computer based analysis tools to review the performance of electronic circuit.
134	Sensors and Transducers Lab	AEIE2152	Employability & Skill Development - Experiment with temperature measuring sensors like AD590 IC sensor, RTD and thermistor. Performance study of capacitive transducer, LVDT, Pressure and displacement sensors. Rotational speed measurement using magnetic proximity sensor, stroboscopic principle. Performance studies of some optical sensors like LDR, photo diode and photo transistor. Design a suitable signal conditioning circuit for a given sensor.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
135	Circuits and Networks Lab	AEIE2153	Employability & Skill Development - Apply network theorems to analyze the experimental result using hardware circuits. Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
136	Digital Electronics	AEIE2201	Employability & Skill Development - Design and implement combinational logic circuits, sequential logic circuits. Describe the nomenclature and technology in the area of memory devices: ROM, RAM, PROM, PLD etc. and different kind of ADCs and DACs. Understand the basic electronics of logic circuits and be able to use integrated circuit packages.
137	Industrial Instrumentation	AEIE2202	Employability & Skill Development - Design different flow measuring devices and level measuring devices with necessary accessories for industry. Demonstrate working knowledge of temperature measuring devices. Design electronic instrumentation system for the acquisition of measurement data produced by measuring instruments for flow, level, temperature and pressure. Formulates industrial process parameters towards the analysis of process data
138	Control Systems	AEIE2204	Employability & Skill Development - Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
139	Microprocessors and Microcontroller	AEIE2205	Employability & Skill Development - This course helps to get jobs in companies that work in embedded systems.
140	Digital Electronics Lab	AEIE2251	Employability & Skill Development - Analyze and identify different components of digital electronic circuits. Design and implement combinational logic circuits, and sequential logic circuits. Develop necessary digital logic and apply it to solve real life problems keeping in mind technical, economical, safety issues.
141	Industrial Instrumentation Lab	AEIE2252	Employability & Skill Development - Demonstrate the calibration process of pressure measuring devices using dead weight taster. Measure process parameters like flow, level, temperature, pressure, moisture and viscosity using different industrial instruments.
142	Electrical and Electronic Measurements Lab	AEIE2253	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Able to make statistical analysis on large number of data. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
143	Control Systems Lab	AEIE2254	Employability & Skill Development - Control the speed of dc motor using different controllers. Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
144	Microprocessors & MicrocontrollerLab	AEIE2255	Employability & Skill Development - It gives the chance to work with actual microprocessors and microcontrollers, to program them for small projects that in turn helps to get jobs in companies that build small pieces of stand-alone or embedded systems with a microprocessor and/or a microcontroller in it.
145	Biosignal and Biomedical Image Processing	AEIE6121	Employability & Skill Development -
146	Intelligent Control	15	Employability & Skill Development - The students will be able to explain the concept of intelligent control and their applications. They will be able to gain knowledge about fuzzy set theory and control scheme based on it. They will be able to apply Genetic Algorithm to solve optimization problems in different control systems. They will be able to provide detailed theoretical and practical aspects of intelligent modeling, optimization and control of non-linear systems. They will be able to design Neural Network based predictor of nonlinear systems. Such endeavours enhances employability of students. As such employability of students enhances. Students will learn importance of process modeling, identification and analyze process dynamics, architecture of process control system like DCS and SCADA, adaptive control for effective process control, application of fuzzy logic, neural network and genetic algorithm in process control which will enhance their employability and skill development
147	Micro-Electromechanical System Design	AEIE6131	Employability & Skill Development - Design MEMS-based diaphragm type devices analytically. Fabricate the whole MEMS system with the help of simulation software. Develop micro-fluidic system for biomedical applications. Develop skill on engineering mechanics for micro-system design.
148	VLSI Technology	AEIE6132	Employability & Skill Development - Develop models of moderately sized CMOS circuits that realize specified digital functions. Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects. Learn VLSI design methodologies - the various steps and tools, the implementation choices, and good architecture practices.
149	Robotics Engineering	AEIE6133	Employability & Skill Development - Solve basic robotic dynamics, path planning and control problems. Model robot links and joints and integrate sensor technology and other external devices into the robot system to design multilink flexible robot.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
150	Remote Sensing	AEIE6134	Employability & Skill Development - Develop skills to address an environmental monitoring problem by selecting an appropriate remotely sensed data set and applying the relevant image analysis and interpretation techniques. Perform basic remote sensing image interpretation including spectral ratios, histogram stretching, filtering, supervised and unsupervised classification algorithms.
151	Dissertation Phase I	AEIE6195	Employability & Skill Development - Dissertation should be on any topic having relevance with Instrumentation, Electrical or inter-disciplinary field of engineering. Dissertation should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
152	Dissertation Phase II	AEIE6295	Employability & Skill Development - Manifest themselves in industrial and research ambiances by growing skills and confidence. Solve, analyze and execute technical projects in specified time frame. Develop ethical and social responsibilities by fulfilling the needs of society for betterment of life and engage themselves in life-long learning. Develop confidence for self-learning attitude for lifelong learning.
153	Comprehensive Viva-Voce	AEIE6297	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning.
154	Chemistry of Biomolecules	BIOT2101	Employability & Skill Development - skill development in spectroscopy, structural chemistry
155	Industrial Stoichiometry	BIOT2102	Employability & Skill Development - skill development in material and energy balance
156	Biochemistry	BIOT2103	Employability & Skill Development - skill development in analysis of biochemical pathways
157	Microbiology	BIOT2104	Employability & Skill Development - skill development in study of microbial life cycle and pathways
158	Biology	BIOT2105	Employability & Skill Development - Employability : to understand basic cell biology , biochemistry and cellular aspect of Life .
159	Biology	BIOT2105	Employability & Skill Development - Students can learn the basics of biology. They will be able to identify and take care of harmful activities and objects in engineering field.
160	Biomolecular Chemistry Lab	BIOT2151	skill development in spectrophotometry and estimation of basic biomolecules
161	Biochemistry Lab	BIOT2153	skill development in estimation of carbohydrates, proteins and fats
162	Microbiology Lab	BIOT2154	skill development in identification of bacteria, growing bacterial cultures
163	Thermodynamics & Kinetics	BIOT2201	skill development in kinetic mechanism of enzyme-substrate reactions
164	Transfer Operation-I	BIOT2202	skill development in transfer operations techniques
165	Industrial Microbiology & Enzyme Technology	BIOT2203	skill development in study of industrial enzymes
166	Molecular Biology	BIOT2204	skill development in DNA replication, transcription and translation
167	Transfer Operation-I Lab	BIOT2252	skill development in operation of flow measuring devices
168	Enzyme Technology & Fermentation Technology Lab	BIOT2253	skill development in Batch Fermentation and assay of Antibiotics
169	Molecular Biology Lab	BIOT2254	skill development in estimation and separation of DNA and RNA
170	Particle & Fluid Particle Processing	CHEN2101	Employability & Skill Development - Students will be able to apply the concepts of screen analysis to select suitable screening equipment and method for a given screening operation. Students will be able to select appropriate size-reduction equipment for a given comminution operation and will be able to calculate the power requirements for the operation.
171	Basics of Material & Energy Balance	CHEN2103	Employability & Skill Development - The students will learn to apply knowledge base to identify dimensionless numbers given several correlated variables. They can acquire ability to handle elementary flow-sheeting given a specific process. they can also develop skills to identify recycle, bypass and purge points in a chemical process and perform calculations with them.
172	Thermodynamics - I	CHEN2104	Employability & Skill Development - student can understand the process involving liquefaction, refrigeration and different power cycles. They can calculate thermodynamic efficiency of a process. It will help students to understand the working principle of airconditioning machine, refrigerator, internal combustion engine etc.
173	Fluid Mechanics (ChE) Laboratory	CHEN2151	Employability & Skill Development - The objective of this course is to impart working knowledge and develop skills of the students in fluid mechanics through bridging between the theoretical concepts and working practices for attaining the competency in practical applications or for working in the industry and conducting research & development activities.
174	Particle & Fluid Particle Processing Laboratory	CHEN2152	Employability & Skill Development - The objective of this course is to provide a hands-on idea on the mechanical devices that are essential in handling the material and it's processing in different chemical engineering related downstream applications.
175	Instrumental Methods of Analysis Laboratory	CHEN2153	Employability & Skill Development - Students will learn to handle advanced analytical instruments like UV-vis spectrophotometer, GC, HPLC, FTIR etc.
176	Heat Transfer	CHEN2201	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes.
177	Thermodynamics II	CHEN2203	Employability & Skill Development - It helps the student to understand multiphase multicomponent thermodynamic equilibrium which is required to design any process equipment for separation process like distillation, absorption, extraction, adsorption etc. Student will also learn chemical reaction equilibrium for the design a chemical reactor.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
178	Material Science	CHEN2204	Employability & Skill Development - The objective of this course is to impart basic knowledge and provide strong foundation to the learners on the processing, structural aspects, properties and functional applications of traditional and advance materials of the modern day.
179	Heat Transfer Laboratory	CHEN2251	Employability & Skill Development - The objective of this course is to provide the practical exposure to the students regarding the application of various heat transfer phenomenon and correlations in various engineering processes. Hands on experience will enable them to analyze working principles of various heat transfer devices including heat exchangers, condensers.
180	Programming Basics for Numerical Computation	CHEN2252	Employability & Skill Development - The objective of this course is to build up the basic knowledge on the programming skill with MATLAB/OCTAVE in order to solve mathematical model relating any chemical engineering process.
181	Engineering Drawing Laboratory	CHEN2253	Employability & Skill Development - The objective of the course is to provide an elaborated concept of engineering drawing and idea on the relevant software for engineering drawing. Student can learn to use AutoCAD software for developing engineering drawing layouts and can prepare a virtual 3-D representation of an engineering equipment.
182	Fundamentals of Strength of Materials	CIVL2101	Employability: Learn the fundamental tools and concepts involving mechanics to analyse and design structures. Forms the basic foundation in order to successfully learn the advanced structural engineering subjects.
183	Soil Mechanics-I	CIVL2102	Employability: To study the physical and mechanical properties of soil and to apply the knowledge for the solution of practical engineering problems.
184	Construction Materials and Technology	CIVL2103	Employability: To assess the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates, concrete, steel, etc
185	Fluid Mechanics	CIVL2113	Employability: To learn fundamental concepts of fluid mechanics and apply the, in irrigation and water resource engineering
186	Strength of Materials Lab	CIVL2151	Employability: Apply the concepts derived from various experiments conducted to determine the various properties of metals at industrial site.
187	Soil Mechanics Lab-I	CIVL2152	Employability: To visually identify different types of soil and to determine soil properties.
188	Construction Materials Lab	CIVL2153	Employability: To test the basic properties of the ingredients of concrete, fresh and hardened concrete properties.
189	Building Planning and Drawing	CIVL2154	Employability: To study various aspects of engineering drawing like plan, elevation, section and apply them in them in the respective field work
190	Fluid Mechanics Lab	CIVL2163	Employability: Understand the behaviour of fluid in various conditions using various experimental setups.
191	Structural Analysis-I	CIVL2201	Employability: To assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
192	Soil Mechanics-II	CIVL2202	Employability: To analyze the stability of retaining walls, slopes and to determine the bearing capacity and settlement of shallow foundation.
193	Surveying	CIVL2203	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
194	Highway and Traffic Engineering	CIVL2204	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
195	Soil Mechanics Lab-II	CIVL2251	Employability: To determine the consolidation and shear strength parameters of soil.
196	Surveying Lab	CIVL2252	Employability: The objective of surveying laboratory is to make student familiar and competent enough to draw map in suitable scale by using different surveying instruments like total station, theodolite, auto level, global positioning system (GPS), geographical information system (GIS), electromagnetic distance measurement (EDM).
197	Highway Engineering Lab	CIVL2253	Employability: The objective of Transportation Engineering laboratory is to determine some of the properties of coarse aggregates and bitumen.
198	Quantity Survey, Specification and Valuation	CIVL2254	Employability: Estimate the complete cost involved in the total planning, execution and construction of any project work. Extremely useful subject in respect to practical civil engineering is concerned.
199	Data Structure and Basic Algorithms	CSEN2004	Employability & Skill Development - Learn about the data structures/ methods/ algorithms mentioned in the course with a comparative perspective so as to make use of the most appropriate data structure/method/algorithm in a program to enhance the efficiency (i.e. reduce the running time) or for better memory utilization, based on the priority of the implementation. Development of an efficient program based on some algorithm will develop skill.
200	Data Structure and Basic Algorithms Laboratory	CSEN2054	Employability & Skill Development - Learning to analyze run-time execution of sorting methods, implementing any ADT using both array based and linked-list based data structures, designing advance data structure using Non-Linear data structure and finding appropriate data structures as applied to specified problem definition will enhance employability & develop skills.
201	Data Structures and Algorithms	CSEN2101	Employability & Skill Development - Teaches the basics of Data Structure and also a few concepts of algorithms. For all the new-age companies that need a programmer to code new algorithms for them, this is a must course.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
202	Discrete Mathematics	CSEN2102	Employability & Skill Development - The portion that deals with Number Theory introduces to the students for the first time what they ultimately use in a group/company working Cryptography or Data Security. Also the other things that are taught like Logic is essential for anybody working in the industry, whatever be the domain.
203	Data Structures and Algorithms Lab	CSEN2151	Employability & Skill Development - This reinforces the knowledge of the Data Structure with an hands-on experience to boost the confidence of the students.
204	Software Tools Lab	CSEN2152	Employability & Skill Development - This is a course that can be rarely found in a typical CSE curriculum. It teaches the things that we typically use in the organizations that do serious software development like Makefile, purify, purecov, codecov etc. That how to write correct code and optimize the same. This course single-handedly differentiates our graduates from the computing departments of other schools.
205	Design & Analysis of Algorithms	CSEN2201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
206	Computer Organization and Architecture	CSEN2202	Employability & Skill Development - This gives the basic idea how a computer works and also. Not only it is a requirement for those who work in hardware but also the Software Engineers need it as it teaches the principles based on which a computer can be used efficiently.
207	Operating Systems	CSEN2203	Employability & Skill Development - Anybody working at the system level in the industry need this course. Also those who work the application layer also need to have a solid idea how the operating system operates at the backend in order make the implementation efficient.
208	Design & Analysis of Algorithms Lab	CSEN2251	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
209	Computer Architecture Lab	CSEN2252	Employability & Skill Development - This course complements the Architecture theory course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
210	Operating Systems Lab	CSEN2253	Employability & Skill Development - A must course for students who look for jobs as a system administrator and or developers that need system level knowledge.
211	Business Analytics	CSEN6121	Employability & Skill Development - The course will guide students to analyze the business of any company and their future prospects. Students will demonstrate knowledge of data analytics. They will be able to understand and critically apply the concepts and methods of business analytics. Students will be able to demonstrate the ability to use various techniques to support data driven business decision making. Student will be able to demonstrate how to recognize trends, detect outliers, summarize data sets and analyze relationships between variables. They will be able to develop and test hypotheses. They will be able to initiate interest to learn various tools used in this area on his/her own. Such knowledge helps in skill development for entrepreneurship.
212	Advanced Artificial Intelligence	CSEN6122	Employability & Skill Development -
213	Mobile Applications and Services	CSEN6131	Employability & Skill Development - In this era of mobile, building various apps and their deployment is pretty useful stuff to learn for the students who seek jobs in developing reliable efficient mobile apps.
214	Compiler for HPC	CSEN6132	Employability & Skill Development - High performance computing is a basic need in this era of data-driven computations and so compilers to deal with high performance computing are in demand, and this course gives students that knowledge.
215	Fault Tolerant Computing	CSEN6134	Employability & Skill Development - This knowledge of this course is required to build a reliable real time system. As a result it is very much required in the industry that rely mostly on reliability of their services.
216	Approximation Algorithms	CSEN6135	Employability & Skill Development - This course helps in a handful of companies that builds software dealing with NP complete (hard) problems, which are hard to solve in real time. Hence they need to find some approximate solutions with provable bounds. There are companies that work on map-analytics, network congestion, traffic flow modeling etc.
217	Randomized Algorithms	CSEN6136	Employability & Skill Development - Again This course helps in a handful of companies that builds software based on randomized processing in order to ensure that the performance does not degrade for any particular distribution of inputs, this subject provides students that knowledge.
218	Information Retrieval	CSEN6137	Employability & Skill Development - The course is helpful for the students who seek their job in information backup and recovery industry.
219	Social Network Analysis	CSEN6138	Employability & Skill Development - The course is helpful for the students who seek their job in companies where recommendation, finding influencer, network clusters are really important for their business. Facebook, Netflix are some of these companies and this subject helps students to gather an in depth knowledge of their working principle.
220	Dissertation – Phase I	CSEN6195	Employability & Skill Development - It helps the students to write a proper technical documentation or manual on their work, which is very much required when they join a company. Most importantly they learn how to do research on a new topic on his own albeit with some guidance from his mentor. Those who go for higher studies get immensely benefitted from such an experience.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
221	Dissertation – Phase II	CSEN6295	Employability & Skill Development - It is the continuation of their earlier work, which helps them in the same way.
222	Analog Circuits	ECEN2101	Employability & Skill Development - Understanding the concepts of electronic ckt operations, designing different types of oscillators and high gain amplifier ckt will enhance employability & develop skills.
223	Circuit and Network Theory	ECEN2102	Employability & Skill Development - Understanding and analysing complex electrical circuits and applying mathematical tool to solve various network behaviour will enhance employability & develop skills.
224	Signals and Systems	ECEN2103	Employability & Skill Development - Understanding how to categorize and identify the different types of signals and systems, analyzing the frequency domain characteristics of signals using mathematical tools, implementing and extending the concepts of transformation tools to design of communication systems and filters will enhance employability & develop skills.
225	Digital Logic	ECEN2104	Employability & Skill Development - Anybody joining the EDA industry or the semiconductor industry at large needs this course as a must.
226	Analog Circuits Laboratory	ECEN2151	Employability & Skill Development - Designing different electronic circuits and measuring circuit parameters will develop skill.
227	Circuit and Network Theory Laboratory	ECEN2152	Employability & Skill Development - Obtaining the ability to apply MATLAB/OCTAVE for circuit analysis, analyzing two port network and designing different circuits will develop skill.
228	Signals and Systems Laboratory	ECEN2153	Employability & Skill Development - Learning signal synthesis using SA ,understanding signal operations and measuring filter responses will develop skill.
229	Digital Logic Lab	ECEN2154	Employability & Skill Development - Hands on experience that helps very much in the Electronic Design Automation (EDA) industry
230	Analog Communication	ECEN2201	Employability & Skill Development - Knowledge of Modulation, time and frequency domain representations of signal, analysis of various multiplexing techniques and radio receivers will develop skill.
231	Digital Systems Design	ECEN2202	Employability & Skill Development - Design of Combinational circuits, registers and Counters, different types of A/D and D/A conversion techniques. the concept of Flip flops to analyze different memory systems will develop skill
232	EM Theory & Transmission Lines	ECEN2203	Employability & Skill Development - Understanding of Electromagnetic wave propagation, different electromagnetic phenomena , design of Impedance Matching Networks for two wire Transmission Lines, analysis of the radiation characteristics of antenna configurations will increase the employability & develop skills
233	Electronic Devices	ECEN2204	Employability & Skill Development - Understanding of operations of solid state devices using relative position of Fermi energy levels across p-n junctions in devices, concepts of different hetero junctions in semiconductor devices will enhance skill.
234	Analog Communication Laboratory	ECEN2251	Employability & Skill Development - Hands on experience in design of modulators & demodulators, measurement of Radio receiver parameters will develop skill.
235	Digital Systems Design Laboratory	ECEN2252	Employability & Skill Development - Realization of Combinational circuits, Counters, multiplexers will develop skill
236	EM Theory & Transmission Lines Laboratory	ECEN2253	Employability & Skill Development - study on radiation patterns of various types of antenna, SW pattern under different conditions will increase the employability & develop skills
237	Design of Embedded Systems	ECEN6122	Employability & Skill Development - This advanced course helps students to learn the real-time working principles of embedded systems, how they communicate and process among themselves in real-time, which is very much required in this modern era of IOT.
238	Design and Technology for Photonic Integrated Circuit	ECEN6125	Employability & Skill Development - Students will be able to solve problems associated with wave propagation through anisotropic mediums. Students will be able to design different components such as planar and rectangular waveguides, bends, Y- section, couplers, filters etc. Students will be able to design coupled waveguides and resonators. Students will be able to design photonic band-gap devices. Students will understand the fabrication process for different optical devices. Students will be able to characterize the basic photonic components using simple python coding. Such knowledge ensures higher employability probability.Students will learn wave propagation through anisotropic mediums, planar and rectangular waveguides, bends, Y- section, couplers, filters, waveguides and resonators, photonic band-gap devices, fabrication process for different optical devices which will enhance their employability and skill development
239	Remote Sensing and applications	ECEN6131	Employability & Skill Development - The students will be able to apply previously gathered knowledge on Electromagnetic Theory and Microwave Engineering to appreciate this subject. They will be able to understand the basics of remote sensing principles and technologies and various remote sensing systems. They will Acquire knowledge about the various remote sensing techniques for applications in improving social, economic and environmental conditions for agricultural, forestry and water body management. They will be able to list various Remote Sensing missions worldwide. They will be able to analyze the operation of various remote sensing devices. They will be able to categorize the role of the Indian remote sensing program to explore possibilities in further studies and research. Consequently, enhance in employability is ensured.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
240	Internet of Things (IoT) and applications	ECEN6132	Employability & Skill Development - The students will acquire the Understanding of different protocols. They will be able to analyze IoT architecture. They will be able to design applications based on IoT. They will be able to create sensor based applications. Which is alignment with Make in india facilitating both Entrepreneurship and Employability.
241	MIMO Systems	ECEN6133	Employability & Skill Development - The students will be able to explain the behavior of wireless communication. They will be able to compare different channel models and MIMO channel model. They will be able to calculate the capacity of MIMO communication systems. They will be able to explain the diversity performance of MIMO channels. They will be able to understand different coding schemes. They will be able to Design systems with multi-user MIMO communications. Such knowledge ensures higher employability probability.
242	Circuit Theory	ELEC2101	Employability and Skill development in electrical technology by Imparting basic knowledge of electrical quantities such as current, voltage, power, energy and frequency to understand the impact of technology in a global and societal context. Identify, formulate, and solve engineering problems in the area circuits and systems, solve electrical circuits having both dependent and independent sources, analyze magnetically coupled circuits, use Laplace transform technique in solving electrical circuits. Design, analyze and synthesize filters.
243	Analog & Digital Electronics	ELEC2102	Skill development / Entrepreneurship- Design and analyze Electronic circuits to meet the specified needs with appropriate consideration. Design and analyze various sequential circuits like synchronous and asynchronous counters, shift registers using flip flops. Entrepreneurship for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools
244	Electrical & Electronic Measurement	ELEC2103	Employability and Skill development in the field of measuring instruments (PMMC, MI & ED). Choose appropriate bridge for measurement of resistance, capacitance and inductance. acquire knowledge about various electronic and digital instruments like average reading AC voltmeters, peak reading AC voltmeters, true RMS voltmeter, electronic multi-meter, digital voltmeters.
245	Circuit Theory Lab	ELEC2151	Skill development in electrical engineering by acquainting the basic concepts and properties of electrical circuits. Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
246	Analog & Digital Electronics Lab	ELEC2152	Skill development for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools.
247	Electrical & Electronic Measurement Lab	ELEC2153	Skill development for measuring electrical parameters in efficient ways.
248	Electrical Machines - I	ELEC2201	Employability and Skill development on- Study of various operations of DC machines and Transformers
249	Signals & Systems	ELEC2202	Employability and Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
250	Basic Thermal Power Engineering	ELEC2203	Skill development in thermal power engineering. Acquiring knowledge about basic Concepts of thermodynamics, understanding the application of first and second law of thermodynamics, understanding the basics of thermal power generation and calculate the efficiencies of Rankine cycles with reheat and regeneration, acquiring knowledge of various types of boilers, turbines used in thermal power plants provides employability.
251	Field Theory	ELEC2204	Skill development in electric field calculation, magnetic field calculation and propagation of electromagnetic wave through different medium
252	Electrical Machines - I Lab	ELEC2251	Employability/Entrepreneurship on various testing of DC machines and Transformer
253	Signals & Systems Lab	ELEC2252	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
254	Basic Thermal Power Engineering Lab	ELEC2253	Employability & Skill Development - Thermal power engineering knowledge provides Employability
255	Environmental Sciences	EVSC2016	Employability & Skill Development - Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems. Educate engineers who can work in a multi-disciplinary environment to anticipate and address evolving challenges of the 21st century. Understand and implement scientific research strategies, including collection, management, evaluation, and interpretation of environmental data. Design and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
256	Human Values and Professional Ethics	HMTS2001	Employability & Skill Development - Gathering knowledge to apply ethical theories in the decision making process , following the ethical code of conduct as formulated by institutions and organizations, implementing the principles governing work ethics, developing strategies to implement the principles of sustainable model of development and implementing ecological ethics wherever relevant will develop skill and enhance employability.
257	Fundamentals of Data Structure & Algorithms	INFO2101	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real life problem which helps in employability.
258	Information Theory & Coding	INFO2111	Employability & Skill Development - Attain the knowledge of information theory and direct applications of it over various real life problem.
259	Fundamentals of Data structure & Algorithms Lab/ Data Structures Laboratory	INFO2151	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real time problem which helps in employability.
260	Algebraic Structures	INFO2201	Employability & Skill Development - Gain Knowledge in checking syntax,testing automation and natural language processing which helps in Employability.
261	Object Oriented Programming	INFO2202	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
262	Computer Organization and Architecture	INFO2203	Employability & Skill Development - Gain knowledge in internal working, structure and implementation of a computer system.
263	Database Management Systems	INFO2204	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
264	Object Oriented Programming Lab	INFO2252	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
265	Computer Organization & Architecture Lab	INFO2253	Employability & Skill Development - Aquired skill to simulate,synthesis and testing of digital circuits which helps in employability.
266	Database Management Systems Lab	INFO2254	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
267	Mathematical Methods	MATH2001	Employability & Skill Development - Develop computational understanding of second order differential equations with analytic coefficients along with Bessel and Legendre differential equations with their corresponding recurrence relations. Master how partial differentials equations can serve as models for physical processes such as vibrations, heat transfer etc.
268	Probability and Statistical Methods	MATH2111	Employability & Skill Development - This is a must course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
269	Advanced Numerical Methods	MATH2202	Employability & Skill Development - Analyzing certain algorithms, numerical techniques and iterative methods that are used for solving system of linear equations, implementing appropriate numerical methods for solving advanced engineering problems , applying the knowledge of matrices for reducing problems involving Science and Engineering, developing an understanding to reduce a matrix to its constituent parts in order to make certain subsequent calculations simpler and applying various optimization methods for solving realistic engineering problems will enhance skill.
270	Advanced Numerical Methods Laboratory	MATH2253	Employability & Skill Development - knowledge of C programming to find non-iterative exact solutions of a system of equations, ability of C programming to solve problems involving interpolation, implementation of algorithms in optimization problems will enhance skill
271	Optimization Techniques	MATH6121	Employability & Skill Development - Students will be able to describe the way of writing mathematical model for real-world optimization problems. They will be able to Identify Linear Programming Problems and their solution techniques. They will be able to categorize Transportation and Assignment problems Students will be able to apply the way in which Game Theoretic Models can be useful to a variety of real-world scenarios in economics and in other areas. They will be able to convert practical situations into non-linear programming problems. They will be able to solve unconstrained and constrained programming problems using analytical techniques. Hence the knowledge acquired through this course helps in developing skill sets for better employability
272	Introduction To Programming	MCAP1101	Skill for applying high-level language to implement different solutions for the same problem and analyze why one solution is better than the other.
273	Mathematical Foundations	MCAP1102	Skill for understanding foundation of mathematics.
274	Numerical Analysis	MCAP1103	Skill development to understand the basics of numerical techniques.
275	Programming Lab	MCAP1111	Skill for writing simple programs relating to arithmetic and logical problems.
276	Computer Organization And Architecture	MCAP1201	Skill development to understand the basic computer organization and architecture.
277	Data Structures	MCAP1202	Skill development to apply different types of data structures in algorithms.
278	Database Management System I	MCAP1203	Employability in the field of database management systems and Relational database.
279	Information System Analysis Design And Implementation	MCAP1204	Entrepreneurship to analyze the feasibility of project.
280	Probability And Statistical Computing	MCAP1205	Skill development for the probability and statistical computing.
281	Digital Logic And Computer Architecture Lab	MCAP1211	Skill development for construct different combinational circuits like Adder, Subtractor, Multiplexer, De-Multiplexer, Decoder, Encoder,etc.
282	Data Structure Lab	MCAP1212	Skill development for knowing how to create an application specific data structures.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
283	Dbms I Lab	MCAP1213	Employability for Apply the RDMS conceptsto create various schema and instances in terms tables.
284	ENGINEERING MECHANICS	MECH2101	Employability & Skill Development - Basic concepts of Engineering Mechanics directly and indirectly help the design process in the industrial products and in personal life.
285	FLUID MECHANICS & HYDRAULICS	MECH2102	Employability & Skill Development - The fundamentals of Fluid Mechanics including Fluid Statics and Fluid Dynamics are introduced through this subject. Students will be able to apply various fundamental relationships of Fluid Mechanics to analyse various system such as piping network having losses, pipe bends etc.
286	Mechanics for Engineers	MECH2106	Skill development to draw free body diagram of a system under equilibrium along with the consideration of frictional forces, engineering design calculations and able to analyze dynamic systems.
287	MACHINE DRAWING-I	MECH2156	Employability & Skill Development - Basic concepts of Sketching,Editing, Modifying & Drafting tools of AutoCAD software are introduced and applied for Conversion(multi view to isometric & Isometric to multi-view), sectional view of solids & 2-D Assembly of part drawings along with dimensioning and convensions used. Students will be able to apply the concepts to read & drawing Assembly Drawings & Production Drawings prevalent in industry.
288	WORKSHOP PRACTICE II	MECH2157	Employability & Skill Development - Hands on training in detailed on machining exposure (Lathe, shapping, milling, drilling etc) and manufacrng procedures (Casting, welding etc.) are helpful for direct bearing on employability.
289	Strength of Materials	MECH2201	Employability & Skill Development - Fundamentals of Mechanics of Materials by studying the deformed behavior of structures (bar, beam, column) under various loading (axial, torsional, bending or combination of them) and boundary (statically determinate & indeterminate) conditions are introduced in this subject. Students will be able to apply the knowledge to analyse, select suitable material and calculate & predict stresses and deformations to a problem at hand and be a part of RnD team of a research institute or company.
290	FLUID MACHINERY	MECH2202	Employability & Skill Development - Students will be able to classify and describe different hydraulic machines, their components, functions, performace curves and use those parameters for selection of a device in practical industrial application.
291	ENGINEERING THERMODYNAMICS	MECH2203	Employability & Skill Development - This is a conceptual subject and the knowledge on ths can be applied in various industrial as well as research field.
292	MANUFACTURING PROCESSES	MECH2204	Employability & Skill Development - Manufacturing knowledge makes students better engineers. Students need to not only design a solution, but make sure that their design can be mass produced in a cost effective way, with high quality.
293	KINEMATICS OF MACHINES	MECH2205	Employability & Skill Development - Kinematic design and analysis is one of the important step in designing a mechanical machine. Students will be able to select and kinematically synthesize different mechanisms, do velocity and acceleration analysis, select and design different transmission systems, cam design for specific application.
294	Mechanical Measurement and Instrumentation	MECH2211	Employability & Skill Development - Students learn various techniques of measurement of dimensions,, tolerances, surfacce finish, temperature, pressure, strain, stress etc and the instruments associated with such measurements. This is a vital skill in any manufacturing industry.
295	APPLIED MECHANICS LAB	MECH2251	Employability & Skill Development - The knowledge and experiences of this lab will help students to determine different material properties (mechanical) through standard testing equipments and testing processes.
296	FLUID MECHANICS & HYDRAULIC MACHINES LAB	MECH2252	Employability & Skill Development - Students will be able to evaluate coefficient of discharge for flow measuring devices and overall efficiencies of various turbines and pumps, validate Bernoulli's equation, calculate flow velocity and friction factor, etc. All of the above mentioned set-ups have practical applications in hydel power plants, pumping industries and also in any piping network.
297	Machine Drawing-II	MECH2256	Employability & Skill Development - Basic Sketching, Options aiding construction, Modelling, Editing, Modifying, Dimensioning tools & features of a solid modelling CAD software (CREO Parametic) are introduced through this Lab course. The knowledge help students to develop an insight about industrial design practice of various machine components which inturn help students take part actively in product developement and/or modifications in any company
298	Mechanical Measurement and Instrumentation Lab	MECH2261	Employability & Skill Development - Students handle and learn to use very precision instruments to measure various parametrs of mechanical components, This skill will help them excel in Quality Control activity in any industry specially the precision ones.
299	Personality Development through Life Enlightenment Skills	PDLS5118	Employability & Skill Development - It helps the students to motivate mentally and physisically. It will also develop skill to handle personal and professional in better way for a succesful career prospect.
300	Physics – II	PHYS2101	Employability & Skill Development - Here the students learn the fundamentals of fluid mechanics, mechanical vibrations and many other mechanical phenomenon. This will enable students to solve engineering problems more effectively in their profession.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
301	Physics (EE)-II	PHYS2211	Employability & Skill Development - Study of Physics-II provides employability.
302	Renewable Energy Resource and Characteristics	REEN5101	Employability & Skill Development - Student will learn different resources of renewable energy and how to extract energy economically to address global energy crisis
303	Research Methodology and IPR	REEN5103	Employability & Skill Development - The students will be able to carry out research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits. The students will be able to understand that when IPR would take such important place in growth. of individuals & nation and its protection would provide an incentive to inventors for further <u>Research and Development</u> .
304	Material for Renewable Energy Application	REEN5141	Employability & Skill Development - Student will learn about the manufacturing process of nano-material and its characterizations techniques. They can design photovoltaic material and its electronic properties for the solar energy application and understand the role of selection for the wind turbine material and its required <u>properties</u> .
305	Modeling and Analysis of Renewable Energy System	REEN5145	Employability & Skill Development - It help student to mathematically model multivariable physical system related to renewable energy generation. They will also be able to apply appropriate optimization methods to determine the optimal scheduling of power generation and also will be able to find out the most economic load dispatch scheduling for power generating units.
306	Measurement Analysis Laboratory	REEN5151	Employability & Skill Development - Student can learn to handle advanced analytical instruments for the characterization and analysis of solid, liquid and gaseous fuel.
307	Solar Energy Engineering	REEN5201	Employability & Skill Development - Students will be able to explain the basics of solar PV cells and relevant parameters for its characterization. They will be able to explain the important features of first to third generation solar cell technology. They can also learn to design solar thermal collector
308	Technology of Renewable Power Generation	REEN5202	Employability & Skill Development - Students will be able to get in-depth understanding of design parameters to help design and simulate the performance of a solar PV power plant. Students will be able to update themselves with the latest trends in wind turbine technology. Students will be able to understand of power systems, their operation and control focused on the issues related to the integration of distributed renewable generation into the network.
309	Hydrogen and Fuel Cell Technology	REEN5241	Employability & Skill Development - The objective of the course is to provide comprehensive and logical knowledge of hydrogen production, storage, and utilization. Student can also learn to design and manufacture fuel cell utilizing state-of-the-art technology.
310	Industrial Energy Analysis	REEN5243	Employability & Skill Development - Student will learn the methods of <u>professional energy audit of an industry</u> .
311	Solar Photovoltaic System Design	REEN5244	Employability & Skill Development - Students will learn to design grid connected and standalone solar systems. They can also learn about engineering material used for commercial renewable power production.
312	Solar Energy Laboratory	REEN5252	Employability & Skill Development - Student will learn handle solar module and also learn to characterize them. Student will learn to handle solar power measuring instruments.
313	Nano materials and Nano Technology	VLSI6131	Employability & Skill Development - Students will learn design and fabrication of nano-scale systems, structures of nanomaterials, preparation of nanoparticles, carbon nanotubes and porous materials, fabrication process which will enhance <u>their skill development</u>
314	RF IC Design and MEMS	VLSI6132	Employability & Skill Development - Students will learn noise and interference performance metrics like noise figure, IIP3 and different matching criteria, wireless standards and various transceiver architectures, RF receiver front end, MEMS fabrication technologies, micro-systems technology for technical feasibility which will enhance their employability and skill development
315	Communication Techniques	AEIE3101	Employability & Skill Development - Sample analog signal properly and Differentiate among pulse modulation & demodulation techniques and signal multiplexing for engineering solutions. Describe and determine the performance of coding schemes for the reliable transmission of digital representation of signals & information over the channel. Explain the concept of frequency reuse, channel assignment strategies and make use of wireless communication tools
316	Microprocessor- Architecture and Applications	AEIE3102	Employability & Skill Development - Develop the skill in program writing for 8085A microprocessor. Describe different types of memory and I/O interfacing with 8085A microprocessor. Describe the architecture of different types of programmable peripheral devices and their interfacing with 8085A microprocessor. Develop the skill to interface different types of I/O devices with 8085A microprocessor using programmable peripheral device.
317	Industrial Instrumentation	AEIE3103	Employability & Skill Development - Design different flow measuring devices and level measuring devices with necessary accessories for industry. Demonstrate working knowledge of temperature measuring devices. Design electronic instrumentation system for the acquisition of measurement data produced by measuring instruments for flow, level, temperature and pressure. Formulates industrial process parameters towards the analysis of process data

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
318	Control Systems	AEIE3104	Employability & Skill Development - Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
319	Microprocessors & Microcontrollers	AEIE3105	Employability & Skill Development - This course helps to get jobs in companies that work in embedded systems.
320	Sensors and Transducers Lab	AEIE3111	Employability & Skill Development - Experiment with temperature measuring sensors like AD590 IC sensor, RTD and thermistor. Performance study of capacitive transducer, LVDT, Pressure and displacement sensors. Rotational speed measurement using magnetic proximity sensor, stroboscopic principle. Performance studies of some optical sensors like LDR, photo diode and photo transistor. Design a suitable signal conditioning circuit for a given sensor.
321	Microprocessor Lab	AEIE3112	Employability & Skill Development - Design the interfacing of input/output devices with 8085 microprocessor using partial and absolute address decoding. Build assembly language program to control input/output devices for various applications. Analyze the processing of analog signal and generation of various analog signals using interfacing circuit. Realize the programming concept of <u>hardware interrupts in 8085 microprocessor</u> .
322	Industrial Instrumentation Lab	AEIE3113	Employability & Skill Development - Demonstrate the calibration process of pressure measuring devices using dead weight taster. Measure process parameters like flow, level, temperature, pressure, moisture and viscosity using different <u>industrial instruments</u> .
323	Control Engineering Lab	AEIE3114	Employability & Skill Development - Control the speed of dc motor using different controllers. Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
324	Microprocessors & Microcontrollers	AEIE3115	Employability & Skill Development - It gives the chance to work with actual microprocessors and microcontrollers, to program them for small projects that in turn helps to get jobs in companies that build small pieces of stand-alone or embedded systems with a microprocessor and/or a microcontroller in it.
325	Process Control	AEIE3201	Employability & Skill Development - Develop the mathematical model for the liquid, thermal and gas systems. Design and simulate the ON-OFF, P, PI, PID etc. controllers both in hardware and software using electronic components, simulink, MatLab, LabVIEW etc. and also knowledge of control valve. Design and develop the ladder logic program in PLC towards the solution of the sequential events <u>performed in industry</u> .
326	Electronic Instrumentation and Measurements	AEIE3202	Employability & Skill Development - Use electronic instruments like VCO, PLL, current mirror, charge amplifier, voltage to frequency and frequency to voltage converter. Explain the circuit operation of CRO, dual trace oscilloscope, delayed time base oscilloscope. Familiar about digital storage oscilloscope, spectrum analyzer. Explain the working of different types of digital voltmeters, digital frequency meter and digital display unit. Check the quality of a coil, capacitor using <u>O meter</u> .
327	Advanced Microprocessors and Microcontrollers	AEIE3203	Employability & Skill Development - Develop the skill in program writing for 8086 microprocessor, 8051 and PIC microcontroller. Understand and realize the interfacing of memory, input/output devices with 8086, the interrupts of 8086 microprocessor, 8051 and PIC microcontroller and the use of timer/counter and serial data communication process in 8051 microcontroller. Apply the knowledge to interface different type of I/O devices with 8051 and PIC microcontroller.
328	Process Control Lab	AEIE3211	Employability & Skill Development - Develop skill to draw and explain P&I diagram of flow, pressure, level and temperature control loop. Apply software tool to study the close loop process responses. Create ladder logic diagram for various sequential operations commonly used in industrial environment. Provide engineering solutions of various societal, professional & environmental <u>responsibilities</u>
329	Electronic Instrumentation and Measurement Lab	AEIE3212	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Able to make statistical analysis on large number of data. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and <u>digital multimeter</u> .
330	Advanced Microprocessors and Microcontrollers Lab	AEIE3213	Employability & Skill Development - Develop 8051/ PIC 16F or 18F series microcontroller based systems to implement various tasks. Design the interfacing of display devices (LED/LCD) with microcontroller. Build program to control input/output devices like motor (stepper motor/servo motor), temperature sensor, key board, etc., with microcontrollers for various applications. Build program using microcontroller to generate different waveforms and perform pulse width modulation of a voltage signal. Design and implement an embedded system using 8051/ PIC 16F or 18F series microcontrollers.
331	Technical Seminar I	AEIE3221	Employability & Skill Development - Build up knowledge in the field engineering, with specialization related to Electronics and Instrumentation engineering and the ability to integrate information across disciplines. Prepare quality presentation on a topic with proper organization and demonstrate the content properly with the aid of audio-video, pictures and documents, etc. Communicate effectively by making an oral presentation before an evaluation committee. Interact efficiently with audience.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
332	Fundamentals of Digital Signal Processing	AEIE3231	Employability & Skill Development - Perform mathematical operations on discrete time signals. Design algorithms of digital FIR and IIR filters according to the given specification and realize structure of a digital filter for given transfer function.
333	Mobile Communication	AEIE3232	Employability & Skill Development - Learn cellular concept and the strategies associated with cellular communication. Evaluate GSM and CDMA technologies with their architecture, frame structure, system capacity as well as services provided by them. Design wireless local area networks utilizing the wireless access protocols and determine the merits and limitations of 3G technology.
334	Opto Electronics and Fibre Optics	AEIE3233	Employability & Skill Development - Learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. Learn the various optical source materials, LED structures, quantum efficiency, Laser diodes, fiber optical receivers such as PIN APD diodes. Specify and analyze optical optoelectronic devices in optical fiber communication. Gain the basic concepts of optoelectronics, properties and industrial applications.
335	Biomedical Instrumentation	AEIE3241	Employability & Skill Development - Different sensors used to measure process variables with that of cardiac variables like- blood flow rate, blood pressure, heart sound, cardiac outputs etc.Design of cardiac pacemaker, Defibrillator or other therapeutic instruments. Understand the various method of medical imaging systems like-MRI, X-Rays, Ultrasounds along with the concept of bio-telemetry.
336	Advanced Sensors	AEIE3242	Employability & Skill Development - Acquaint the fundamentals of sensing materials, properties and industrial applications and understand microfabrication techniques. Explain the need for smart sensors and choice of materials in microfabrication techniques.
337	Non Conventional Energy Sources	AEIE3243	Employability & Skill Development - Estimate the scope of wind energy for electricity generation and explain the process to harness energy from nonconventional energy sources like geothermal, tidal, ocean-thermal and wave. Evaluate the economical use of renewable energy resources compared to conventional energy sources.
338	Genetics	BIOT3101	skill development in genetic disorders, genetic counseling
339	Bioinformatics	BIOT3102	skill development in genomics, databases, programming and structure prediction
340	Recombinant DNA Technology	BIOT3103	skill development in DNA cloning, restriction enzymes and DNA editing
341	Transfer Operation-II	BIOT3104	skill development in advanced transfer operations techniques
342	Immunology	BIOT3201	skill development in immunological techniques, immune disorders
343	Plant Biotechnology	BIOT3202	increases employment opportunity in plant tissue culture sector
344	Bioreactor Design and Analysis	BIOT3203	skill development in bioreactor types, mode of action
345	Molecular Modeling & Drug Designing	BIOT3241	increases employment opportunity in drug designing and pharmaceutical industry
346	Biophysics of Macromolecules	BIOT3242	skill development in biophysical techniques
347	Biosensors and Diagnostics	BIOT3243	increases employment opportunity in biosensor and bioinstrumentation industry
348	Biofertilizers and Biopesticides	BIOT3244	increases employment opportunity in biopesticides and biofertilizer sector
349	Chemical Reaction Engineering	CHEN3102	Employability & Skill Development - Student will be able to differentiate and analyze between ideal and non ideal reactors using suitable model equations and to utilize the design strategies of non ideal reactors. They can also apply the concepts of RTD as a tool for designing and scale up industrial reactors.
350	Separation Process - II	CHEN3103	Employability & Skill Development - Students will be able to design various process equipment pertaining to separation process like Cooling Tower, Extractor, Dryer. Students will be able to classify different membrane separation and will be able to evaluate the merits of the process.
351	Numerical Methods of Analysis	CHEN3104	Employability & Skill Development - Student will learn to mathematically modeled using linear algebra, students will be able to relate the dependent and independent variables to define the final equation. Students will be able to identify the broad category of numerical method to solve the corresponding mathematical problem. It will be also possible to model an engineering process using partial differential equations (PDE), students will be able to identify the type of PDE and its associated boundary conditions. Students will develop the numerical form of the governing equation by applying principles of numerical differentiation.
352	Mass Transfer laboratory	CHEN3111	Employability & Skill Development - The objective of the course is to provide an overview of different mass transfer operation relevant to process industry. They can learn to operate Distillation column, Drying Unit, Absorption Column etc.
353	PEDD- I	CHEN3112	Employability & Skill Development - Student can learn to design and Drawing Pressure Vessel - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw industrial scale Reactor.
354	Chemical Reaction Engineering Laboratory	CHEN3113	Employability & Skill Development - Student will learn to operate different type of chemical reactor that are used in industry. They can also learn to analyze the performance of a real reactor by generating its RTD profile.
355	Polymer Science & Engineering	CHEN3131	Employability & Skill Development - The students will be exposed to the knowledge of developing biodegradable and biocompatible polymers for maintaining ecology of the soil. They can learn various types of polymer composites to develop new materials. The students will be knowledgeable in identifying and controlling the use of hazardous behaviour of plastics in the industrial applications and social applications, particularly health issues.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
356	Petrochemical Technology	CHEN3132	Employability & Skill Development - Students will learn the design and operation of petrochemical complexes. Students will familiar with major polymerization processes on industrial scale.
357	Material Science & Engineering	CHEN3133	Employability & Skill Development - The students will acquire adequate understanding about the phase diagram of different valuable and commonly used alloys and materials in engineering and do necessary modifications in the composition of the materials like pure metals, alloys like steel, brass etc, polymeric materials, ceramic and composites like FRP, RC casting, Plywood boards, high performance cutting tools, Cermets etc. The students will be knowledgeable in eliminating or introducing structural defects or foreign elements in the original crystal lattice of the materials like preparation of innovative alloys, p & n - type semiconductors, piezoelectric materials etc so as to tailor the properties of the materials according to requirement.
358	Process Dynamics, Instrumentation and Control	CHEN3201	Employability & Skill Development - Student can explain the basic principles & importance of process control in industrial process plants They can specify the required instrumentation and final elements to ensure that well-tuned control is achieved and can explain the use of block diagrams & the mathematical basis for the design of control systems.
359	Project Engineering	CHEN3202	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
360	PEDD- II	CHEN3211	Employability & Skill Development - Student can learn to design and Drawing of Heat Exchangers - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw various flow measuring devices such as venturimeter, orificemeter pitot tube etc.
361	Numerical Methods Laboratory	CHEN3212	Employability & Skill Development - The course Illustrate the basics of MATLAB or equivalent software programming. Student can develop the logic for the chosen numerical method and can write MATLAB code. They learn to compile the final outcome of the given problem with expected result either in numeric or in graphical representation.
362	Seminar I	CHEN3221	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner
363	Nano Technology	CHEN3231	Employability & Skill Development - Student can classify the various types of process used in nano-manufacturing of 1D, 2D and 3D nanostructures. They can Identify the processes necessary to build a particular nano structure and can exhibit knowledge of the relevant physical, chemical, mechanical, electrical and optical properties of materials in nano configuration. Students decide on measurements and instruments used for characterizing a nanomaterial.
364	Bioprocess Engineering	CHEN3233	Employability & Skill Development - students can design bioreactors for free enzymatic reaction under enzyme uninhibited/inhibited conditions. They can use principles of bioprocess engineering for selecting and designing suitable contacting device for immobilized enzyme reactions under mass transfer/bioreaction control condition.
365	Analysis of Structures II	CIVL3101	Employability: To assess the advanced methods of calculating force that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
366	Soil Mechanics II	CIVL3102	Employability: To analyze the stability of retaining walls, slopes and to determine the bearing capacity and settlement of shallow foundation.
367	Highway & Traffic Engineering	CIVL3103	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
368	Environmental Engineering	CIVL3104	Employability: To assess various characteristics of water, waste water and their removal techniques, various treatment units and their designs
369	Design of R.C.C. Structures	CIVL3105	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structural elements.
370	Soil Mechanics Lab I	CIVL3111	Employability: To visually identify different types of soil and to determine soil properties.
371	Concrete Technology Lab	CIVL3112	Employability: To test the basic properties of the ingredients of concrete, fresh and hardened concrete properties.
372	Environmental Engineering Lab	CIVL3113	Employability: To determine experimentally the various properties of water as well as waste water.
373	R. C. C. Design & Detailing	CIVL3121	Employability: Able to analyse and design reinforced concrete building for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing and produce design calculations and drawing in appropriate professional format
374	Design of Steel Structures	CIVL3201	Employability: Able to analyse and design steel structures for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
375	Foundation Engineering	CIVL3202	Employability: To analyze pile foundation and sheet pile structures on the basis of sub-soil exploration results and to assess different types of ground improvement techniques.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
376	Prestressed Concrete	CIVL3203	Employability: To learn the concepts of analysis and design methods of Prestressing using high strength materials
377	Soil Mechanics Lab II	CIVL3211	Employability: To determine the consolidation and shear strength parameters of soil.
378	Transportation Engineering Lab	CIVL3212	Employability: The objective of Transportation Engineering laboratory is to determine some of the properties of coarse aggregates and bitumen.
379	Steel Structure Design & Detailing	CIVL3221	Employability: Able to analyse and design steel structures such as factory shed for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
380	Railway & Airport Engineering	CIVL3231	Employability: To have a detailed knowledge of every aspect of railway engineering like rails, sleepers, ballasts, their use and functions. To have a detailed knowledge regarding airport runway, its design and multiple parameters that are taken into consideration for construction of airport.
381	Advanced Surveying	CIVL3232	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Advanced surveying includes aerial survey, photogrammetry, etc.
382	Design of Tall Structures	CIVL3233	Employability: Learn and apply the fundamental and in-depth concepts required by a civil engineer to design tall/ high rise structures above 50 to 100 m.
383	Soil Stabilization & Ground Improvement Techniques	CIVL3234	Employability: To investigate different methods for improving the stability of the existing ground by reducing its permeability and increasing its overall strength.
384	Object Oriented Programming using C++	CSEN3004	Employability & Skill Development - Ability to develop the object oriented application using C++ and improvement of performance of solution using exception handling will enhance the employability
385	OOPs Laboratory	CSEN3014	Employability & Skill Development - Hands on experience of object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O, other standard language constructs and other features of the C++ language including use of templates, and handling exceptions improves programming skill & Employability
386	Formal Language & Automata Theory	CSEN3101	Employability & Skill Development - This is the basic course that teaches the students the underlying theory of computation - what can be computed and what not. The jobs that has the requirement of building new compiler for a new language or capture a input from the user pertaining to a specific regular expression must need this knowledge.
387	Database Management Systems	CSEN3102	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course.
388	Operating Systems	CSEN3103	Employability & Skill Development - Anybody working at the system level in the industry need this course. Also those who work the application layer also need to have a solid idea how the operating system operates at the backend in order make the implementation efficient.
389	Computer Architecture	CSEN3104	Employability & Skill Development - This course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
390	Data Structure & Algorithm	CSEN3106	Employability & Skill Development - increases employment opportunity in IT programming sector
391	Database Management Systems Lab	CSEN3112	Employability & Skill Development - This gives a hands-on chance to write queries and learn the different commands that a Database Administrator (DBA) needs to execute and hence helps jobs of becoming a DBA. Also good knowledge of this is required for groups writing a banking software or an ERP software.
392	Operating Systems Lab	CSEN3113	Employability & Skill Development - A must course for students who look for jobs as a system administrator and or developers that need system level knowledge.
393	Computer Architecture Lab	CSEN3114	Employability & Skill Development - This course complements the Architecture theory course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
394	Computer Networks	CSEN3201	Employability & Skill Development - Anybody working in a networking company, like a internet service provider, a mobile service provider, a company that builds networking hardware like CISCO or write networking software for other third party vendors need such a course.
395	Software Engineering	CSEN3202	Employability & Skill Development - Any software engineer working in development project or maintenance project will need this knowledge.
396	Data Base Management System and Computer Networking	CSEN3205	skill development In Information Technology sector
397	Data Structure & RDBMS	CSEN3206	Employability: to understand Linear Data structures, Recursion: Design of Recursive algorithm.
398	Computer Networks Lab	CSEN3211	Employability & Skill Development - It complements the theory course in networking and helps the students to become confident with the basic hardware and software required to be handled in a company that needs to manage a network.
399	Software Engineering Lab	CSEN3212	Employability & Skill Development - It complements the theory course; students learn all the practical aspects of software engineering through mini-projects that are sometimes close replicas of what they do in the industry after joining.
400	System Administration Lab	CSEN3213	Employability & Skill Development - Every software firm need at least one system administrator or a team depending on its size and this course trains up the students for that role.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
401	RDBMS Lab	CSEN3216	Employability : To perform Experiments on Database on RDBMS Platform (Oracle)
402	Computer Graphics & Multimedia	CSEN3280	Employability & Skill Development - The students who are seeking jobs in graphics company that help in developing animation for films or content generation need this.
403	Artificial Intelligence	CSEN3281	Employability & Skill Development - This is must course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc.
404	Web technologies	CSEN3282	Employability & Skill Development - Anybody developing web applications for nay company, whether on the client side or server side will find this course very helpful.
405	Advanced Java Programming	CSEN3283	Employability & Skill Development - It prepares the studnets for companies that develop software in JAVA-based technologies, which is a high percentage for the last two decades.
406	Computer Graphics & Multimedia Lab	CSEN3285	Employability & Skill Development - It complements the corresponding theory course; helps student to learn developing graphics software required in animation companies.
407	Artificial Intelligence Lab	CSEN3286	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
408	Web technologies Lab	CSEN3287	Employability & Skill Development - A very helpful course for students who will join companies writing software for web applications.
409	Advanced Java Programming Lab	CSEN3288	Employability & Skill Development - It gives a hands-on experience on both client-side and server-side programming in JAVA and associated technologies.
410	Seminar I	CSEN3297	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry.
411	Microelectronics And Analog Vlsi Design	ECEN3103	Employability & Skill Development - Understanding of the IC Fabrication Process Flow leading to the practical realization of the scaled MOSFETs, Design MOS circuits of practical importance e.g., common-source amplifiers and differential amplifiers will enrich employability & develop skills.
412	Digital Communication	ECEN3105	Employability & Skill Development - Application of mathematical concepts to analyze the source coder and channel coder blocks of the digital communication system, analysis of error performance of a baseband receiver in digital communication system, understanding of various digital modulation, demodulation techniques and concept of OFDM and Spread Spectrum Modulation system will enhance employability & develop skills.
413	Microelectronics And Analog Vlsi Design Lab	ECEN3113	Employability & Skill Development - Experiments on the basic principle of operation of NMOS and PMOS,VLSI sub-circuits etc will enhance employability & develop skills.
414	Microprocessors, Microcontrollers & Systems Laboratory	ECEN3114	Employability & Skill Development - The concepts of CPU, timing and control signals I/O devices, and various BUS structure, knowledge about interrupts, stack and subroutine , concept the architecture of 8086 family & ARM basics understanding of interfacing of processor with memory and I/O devices and analysis of microcontroller 8051 architecture will increase the employability & develop skills
415	Digital Communication Laboratory	ECEN3115	Employability & Skill Development - Hands-on experiments on Implementation and study Line codes, Analysis and comparison of time domain and frequency domain representation of various digital modulation and demodulation schemes will increase employability & develop skills.
416	Digital Vlsi Design	ECEN3201	Employability & Skill Development - Industry Requirement level learning on VLSI Design Cycle, Style and Methodology , ability to construct Physical Layout Design and Stick Diagram of Digital Gates ,ability to interpret Si Testing and Debug related algorithms and Fault Modeling will enhance the Employability and develop skill.
417	Digital Signal Processing & Applications	ECEN3202	Employability & Skill Development - The concept of z-transformation, convolution, knowledge of discrete-time Fourier transform to interpret DFT, FFT and design of transfer functions of IIR/FIR filters will enhance employability & develop skills.
418	Digital Vlsi Design Laboratory	ECEN3211	Employability & Skill Development - Backend Design using Industry Standard Mentor Graphics CAD Tool including Eldo Circuit Simulator & Frontend design using XILINX-Vivado Simulator will enrich employability and develop Skill.
419	Digital Signal Processing & Applications Laboratory	ECEN3212	Employability & Skill Development - Hands on experiments on application of different transformation tools-z-transform, discrete fourier transform, fast fourier transform on signals and study on the frequency response of FIR and IIR digital filters and use of DSP processors for analysis of different real time signals will improve the employability & develop skills.
420	Telecommunication Systems	ECEN3234	Employability & Skill Development - Concepts of signaling techniques, setting up links, working principles and practical applications of FAX, EPABX, EFT, Email, ISDN etc , knowledge of EWSD, NGN, ADSL ports will increase the employability & develop skills
421	Electrical Machine-II	ELEC3101	Skill development in- Study of various operations of Synchronous machines and Induction machines



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
422	Power System-I	ELEC3102	Skill development in study of various methods of conventional power generation. Employability- To develop the electrical design and the mechanical design of power transmission system and to analyze the performance of different types of transmission lines. Study of the underground cables, different type of distribution systems and power factor correction techniques provides employability.
423	Signals & Systems	ELEC3103	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
424	Data Structure and Database Concept	ELEC3104	Employability & Skill Development - Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
425	Electrical machine Lab.-II	ELEC3111	Employability/Entrepreneurship on various testing of Synchronous machine and induction machines
426	Power system-I Lab.	ELEC3112	Skill development to evaluate ABCD parameters of transmission line and to analyse dc distribution network. Measurement of the break-down strength of different insulating materials and earth resistance provides employability.
427	Signals & Systems Lab	ELEC3113	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
428	DBMS Laboratory	ELEC3114	Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
429	Electronic Instrumentation	ELEC3131	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
430	Illumination Engineering	ELEC3132	Employability - Design and develop energy efficient indoor lighting schemes for proper illumination following different standards
431	Power System-II	ELEC3201	Employability and skill development in representation of power system, symmetrical and unsymmetrical fault analysis, power flow and stability analysis. Different grounding schemes, protective relays, circuit breakers and different protection schemes used for different sections of power system provides employability.
432	Power Electronics	ELEC3202	Employability - analyze the operation of different power electronic converters
433	Control System	ELEC3203	Entrepreneurship in control engineering designing. Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
434	Microprocessor & Microcontroller	ELEC3204	Skill development in microprocessor and microcontroller based system by acquiring concept of 8051 and 8085 architecture, assembly language programming and interfacing circuits. Design and analyze various microprocessor based systems to implement suitable application. Entrepreneurship for designing electronic products by learning the building blocks and programming of microprocessor and microcontroller, analytical and computer tools thereby creating employability.
435	Power System-II Lab.	ELEC3211	Employability and skill development in electrical power system protection by operating different types of relay and become proficient with computer skill (e.g. ETAP) for the analysis of power system and its protection.
436	Power Electronics Lab.	ELEC3212	Employability - In study of various power electronics circuits
437	Control System Lab	ELEC3213	Entrepreneurship in control engineering designing. Skill development to Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
438	Microprocessor & Microcontroller Lab	ELEC3214	Provides Employability/Entrepreneurship, skill development in electrical engineering by acquiring the basic concepts and properties of 8085 microprocessor and 8051 microcontroller. Analyze and write assembly language programming related to data transfer, arithmetic and logical operations, stack and subroutine operations to design suitable application. Interface various peripheral device with 8085 microprocessor and 8051 microcontroller to implement suitable application.
439	Digital Signal Processing	ELEC3231	Skill development in time domain signal processing and in developing efficient architectures of DSP
440	Electrical Machine Dynamics	ELEC3232	Skill development in the study of dynamic behaviour of different electrical machine.
441	Economics for Engineers	HMTS3101	Employability & Skill Development - It gives a basic idea how the business operates. Any student who work in productization, try to become an entrepreneur or heads a group in which he/she is responsible for profit and loss gets immensely benefitted by it. Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
442	Principles of Management	HMTS3201	Employability & Skill Development - The students joining a software firm soon gets promoted into leadership positions and need to manage projects where they need expertise for both technical issues as well the capability for handling human resources. So this is a must for students joining the industry. Skills and roles of a Manager, functions, principles. Acquire knowledge of planning process, Organizational design and structure, staffing, Decision-Making, coordinating and controlling. Organization Behaviour: Motivation, Leadership, Communication, Teams and Team Work.
443	Personality Development	HMTS3221	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques to face the non-technical round of the job interviews, which is an important milestone that they have to cross before being employed in a multi-national company. Learn SWOT Analysis. Expert in Professional Communication. Developed skills like: Leadership & Team Playing, Motivation, Negotiation Skills, Conflict Management and Planning & Envisioning.
444	Foundation Course on Finance, Economics & Marketing	HMTS5201	Employability & Skill Development - Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
445	Operating Systems Concepts	INFO3101	Employability & Skill Development - Acquired skill of system software that manages computer hardware and software resources.
446	Computer Architecture	INFO3102	Skill development in computer system structuring, Synchronization, communication and scheduling in parallel systems
447	Software Engineering & Project Management	INFO3103	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
448	DBMS	INFO3104	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator.
449	UNIX & Operating Systems Laboratory	INFO3111	Employability & Skill Development - Attain the knowledge in Programming for task, scheduling and memory management techniques.
450	Computer Architecture Laboratory	INFO3112	Employability & Skill Development - Gain knowledge of VHDL Simulator and apply on various complex application.
451	Software Engineering & Project Management Laboratory	INFO3113	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
452	DBMS Laboratory	INFO3114	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
453	Communication Theory	INFO3131	Skill development to analyze and design analogue and digital communication systems.
454	Compiler Design	INFO3132	Employability & Skill Development - Gain Knowledge in checking syntax, testing automation and natural language processing which helps in Employability.
455	Discrete Mathematics	INFO3133	Employability/skill development-improves computational skills and data analysis.
456	Data Warehousing & Data Mining	INFO3201	Employability & Skill Development - Acquire skill related to Hadoop and Hadoop Eco-System, Access and Process Data on Distributed File System. Attain knowledge to Develop Big Data Solutions using Hadoop Eco System.
457	Computer Networks	INFO3202	Employability & Skill Development - Gain knowledge on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels
458	Advanced Java & Web Technology	INFO3203	Employability & Skill Development - Attain the skill on how to develop web pages using HTML, Java Script and CSS. Implementation of server side program using servlet and JSP.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
459	Data Analytics Lab	INFO3211	Employability & Skill Development - Gain knowledge in core programming basics and program design with functions using Python. Analyze real world datasets and apply suitable clustering algorithms to group data based on similarity.
460	Computer Networks Lab	INFO3212	Employability & Skill Development - A study on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels
461	Advanced Java & Web Technology Lab	INFO3213	Employability & Skill Development - Attain the skill on how to develop web pages using HTML,Servlet and JSP program. Design XML document and DTD.
462	Seminar - I	INFO3221	Employability & Skill Development - Enhance employability due to knowledge of contemporary technology and communication skills.
463	E-Commerce & ERP	INFO3231	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
464	Computer Graphics & Multimedia	INFO3232	Employability through developing various applications which uses a multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video.
465	System Software and Administration	INFO3233	Employability & Skill Development - Learn the basics of system programs like editors, compiler, assembler, linker, loader, interpreter, debugger etc. Learn how to Install and manage disks and file systems.
466	E-Commerce & ERP Laboratory	INFO3236	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
467	Computer Graphics & Multimedia Laboratory	INFO3237	Employability & Skill Development - Acquire necessary skill for developing gaming and graphic environment .
468	System Software and Administration Laboratory	INFO3238	Employability & Skill Development - Configure different servers in linux system. Gain knowledge on how to Install and manage disks and file systems.
469	Artificial Intelligence	INFO3241	Employability & Skill Development - Motivates entrepreneurship in developing many applications like chat bot,increases business efficiency etc
470	Wireless & Mobile Computing	INFO3242	Employability & Skill Development - Helps in employability through understanding the issues surrounding the mobile platforms
471	Pattern Recognition	INFO3243	Employability & Skill Development - Acquired skill on how to recognize patterns by using machine learning algorithm.
472	Digital Logic Design	MCAP1101	Skill development to design applications of Sequential Circuits and Finite State Machines.
473	Introduction To Programming	MCAP1102	Skill development to apply high-level language to automate the solution for a problem.
474	Numerical And Statistical Techniques	MCAP1103	Skill development to understand the basics of numerical and statistical techniques and how those can be abstracted through logical variables and connectives.
475	Discrete Mathematics	MCAP1104	Skill development for understanding mathematical solutions.
476	Management Information System	MCAP1105	Entrepreneurship for accomplishments of managerial goals.
477	Digital Logic Lab	MCAP1111	Skill development to implement the design of Sequential Circuits and Finite State Machines.
478	Programming Lab	MCAP1112	Employability in the field of computer programming.
479	Object Oriented Programming With Java	MCAP1201	Skill development for objet oriented programming concept.
480	Data Structures	MCAP1202	Skill development to apply different types of data structures in algorithms.
481	Database Management Systems I	MCAP1203	Employability in the field of database management systems and Relational database.
482	Optimization Techniques	MCAP1204	Entrepreneurship to develop the idea of job sequencing to minimize the production time and costs, also to help production facility for staff allocation and equipment management.
483	Computer Organization And Architecture	MCAP1205	Skill development to understand the basic computer organization and architecture.
484	Object Oriented Programming Lab	MCAP1211	Skill development to solve real world problems using OOP techniques.
485	Data Structures Lab	MCAP1212	Skill development to evaluate solutions of a problem with different data structures to select suitable data structures for a solution.
486	Dbms I Lab	MCAP1213	Skill development to apply Standard Query Language (SQL) for relational databases.
487	Dynamics of Machines	MECH3101	Employability & Skill Development - Effect of dynamic forces in a system have consequences such as unbalancing and vibration. So, the topics covered in this subject will help the students in designing and maintainning of a machine.
488	Heat Transfer	MECH3102	Employability & Skill Development - In industrial application many a time heat exchangers are required to be designed. This course gives a basic idea on this.
489	Design of Mechanical Systems-I	MECH3103	Employability & Skill Development - Knowledge aquired by students in this paper will help them to take part actively in designing any product or modification of any existing product for better performance.
490	Fluid Mechanics & Hydraulic Machines Lab	MECH3111	Employability & Skill Development - Hands on traing on hydraulics equipment and hydraulic machines are helpful for direct bearing on employability.
491	Design Practice – I	MECH3112	Employability & Skill Development - In this paper students are discussed with industrial design practice of various machine components and also they are trained in various solid modeling tools of a CAD software. Knowledge on industrial design practice and modeling tools of a CAD software helps students takes part actively in product developement and/or modifications in any company.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
492	Seminar-I	MECH3121	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
493	Fluid Power Control	MECH3131	Employability & Skill Development - Concepts on fluid power control may provide students an opportunity and a significant role in manufacturing industries.
494	Refrigeration & Air Conditioning	MECH3132	Employability & Skill Development - Theoretical concept of Refrigeration are required to design different refrigeration unit, calculating heat load etc.
495	Electrical Machines	MECH3133	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). A preliminary idea about the working principle and the characteristics of such machines will lead to an increased productivity in the shop floor.
496	Fluid Power Control Lab	MECH3136	Employability & Skill Development - In the practical class, identification of various components of a Hydraulic and Pneumatic system, preparation of circuits using those components, along with the calculation of input power requirement, speed of actuator are done, which are integral parts of selection of input parameters in machining operations in industrial application.
497	Refrigeration & Air Conditioning Lab	MECH3137	Employability & Skill Development - Identification of various key components of a refrigeration and air conditioning system and the calculation of COP are extremely important for employment in refrigeration, air conditioning, and cryogenic engineering which is imparted in this Lab.
498	Electrical Machines Lab	MECH3138	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). Hands on training or a preliminary idea about the working principle and the characteristics of such machines will lead to an increased productivity in the shop floor.
499	Total Quality Management (TQM)	MECH3141	Employability & Skill Development - Students must have adequate knowledge on usages of various statistical tools and the techniques to be applied in the Industries to maintain consistency in quality.
500	Finite Element Method	MECH3142	Employability & Skill Development - FEM is the backbone of numerical validation of any product under design. So, knowledge on this paper will help them to be an active member in the RnD team of any company.
501	Turbo Machinery	MECH3143	Employability & Skill Development - Theoretical concept of turbomachines are required to design different hydraulic plant, power plant etc.
502	New Product Development	MECH3144	Employability & Skill Development - Theoretical knowledge on new product development concepts involving need analysis, technology forecasting and development planning
503	Tool Engineering	MECH3145	Employability & Skill Development - Students understand directly tool geometry, cutting tool features suitable for adverse conditions and how to make a cutting tool.
504	Industrial Robotics	MECH3146	Employability & Skill Development - The topics covered in the course will help student to conceptualize, analyze, design and control of robots for different industrial applications.
505	IC Engines	MECH3201	Employability & Skill Development - Overall concept of conversion of fuel energy into mechanical energy including the various mechanisms which are required for conversion of motion will be highly applicable in automobile industry.
506	Machining Principle & Machine Tools	MECH3202	Employability & Skill Development - Machining and Machine tools are playing an important part in various manufacturing companies. It helps in delivering products and components to the maximum possible specifications. It is the main foundation for precision manufacturing.
507	Dynamics of Machines Lab	MECH3211	Employability & Skill Development - With the knowledge and experiences of this subject, students will be able to monitor vibration, measure unbalancing and do corrections, evaluate performance of governors, design a cam for specific application.
508	Applied Thermodynamics & Heat Transfer Lab	MECH3212	Employability & Skill Development - Practical knowledge on (i) dryness fraction of steam and (ii) various other devices involving convecting heat transfer coefficient will be an added advantage for students working in thermal power plant.
509	Seminar-II	MECH3221	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
510	Design of Mechanical Systems-II	MECH3251	Employability & Skill Development - In this paper students are taught about various machine component designs, like design of Gears, design of Breaks and Clutches, design of Pressure Vessels and design of Bearings. So detailed knowledge on this paper will give them a cutting edge to work with technical command in any mechanical company where these components are used extensively, or these machine elements are manufactured.
511	Mechatronics	MECH3252	Employability & Skill Development - Theoretical knowledge on industrial automation and control, CNC machines, robots and automated handling system.
512	Advanced Fluid Mechanics	MECH3253	Employability & Skill Development - Theoretical concept of advanced fluid mechanics are required to design modern hydraulic plant, power plant etc.
513	Design Practice - II Lab	MECH3256	Employability & Skill Development - Students are taught in detail about various Pre-processing and Postprocessing tools of a FEA software in this practical paper. Knowledge on numerical analysis of any object or product under various loading and boundary conditions using a FEA software gives the students immense capability and a fair opportunity to work in the R-n-D team of any core company or to do a research work efficiently in their higher studies.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
514	Mechatronics Laboratory	MECH3257	Employability & Skill Development - Programming, operation and use of industrial automated equipment
515	Advanced Fluid Mechanics Lab	MECH3258	Employability & Skill Development - Practical knowledge of various hydraulic machines and piping systems would be helpful for students employment in various power plants.
516	Maintenance Engineering	MECH3261	Employability & Skill Development - Owning machines and plants are not enough unless the students have fair knowledge about how well the machines are maintained, upkept, mended and tended for restoration of plant performance.
517	Renewable Energy Systems	MECH3262	Employability & Skill Development - Comprehensive know-how must be acquired by students for different renewable energy systems in the backdrop of increasing global energy demands and fast-depleting fossil fuel reserves, including their selection criteria, design and maintenance for specific applications.
518	Materials Handling	MECH3263	Employability & Skill Development - A comprehensive knowledge must be acquired by the students for different material handling equipments, including its selection criteria, maintenance and design with the specific applications.
519	CAD/CAM	MECH3264	Employability & Skill Development - CAD/CAM/CAE are the three pillar in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
520	Operations Management	MECH3265	Employability & Skill Development - CAD/CAM/CAE are the three pillars in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
521	Energy Resource	REEN5101	Employability & Skill Development - Student will learn different resources of renewable energy and how to extract energy economically to address global energy crisis
522	Renewable Energy I	REEN5102	Employability & Skill Development - Students will be able to explain the basics of solar PV cells and relevant parameters for its characterization. They will be able to explain the important features of first to third generation solar cell technology. They can also learn to design solar thermal collector
523	Materials for Energy conversion systems	REEN5104	Employability & Skill Development - Student will learn about the manufacturing process of nano-material and its characterizations techniques. They can design photovoltaic material and its electronic properties for the solar energy application and understand the role of selection for the wind turbine material and it required properties.
524	Solar Laboratory	REEN5111	Employability & Skill Development - Student will learn handle solar module and also learn to characterize them. Student will learn to handle solar power measuring instruments.
525	Energy Devices Laboratory	REEN5112	Employability & Skill Development - Student will learn to handle device and instruments that are used for storage and measurement of energy production and distribution
526	Seminar -I	REEN5121	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
527	Design of Heat Transfer Equipments	REEN5141	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes. They can design heat exchanger network also.
528	Renewable Energy II	REEN5203	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
529	Non solar laboratory	REEN5211	Employability & Skill Development - Student will be able to design processes producing alternative source of energy. They can characterize the quality of fuel generated from alternative source and operate electrical equipments for power generation.
530	Internship	REEN5221	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to an industry engaged in harvesting energy from renewable resource
531	Seminar -II	REEN5222	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
532	Measurement and Control for Energy System	REEN5241	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameter for the process related to energy production and distribution.
533	Energy & Environmental Impact Analysis	REEN5242	Employability & Skill Development - The students will be able to identify the Basics of Environmental Engg. Principles need for carrying out EIA. The students will be able to analyze different technologies and Legislations / Rules. The students will be able to implement Do's & Don'ts practices for Renewable Energy Endeavours.
534	Electronics Instrumentation & Control for Energy System	REEN5244	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameter for the process related to energy production and distribution.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
535	Telemetry & Remote Control	AEIE4101	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design biotelemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution systems for telemetry in process plants.
536	Power Electronics and Drives	AEIE4102	Employability & Skill Development - Gain practical knowledge about power electronic devices. Analyze various single phase power converter circuits and understand their applications. Practical knowledge about using simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
537	Telemetry & Remote Control Lab	AEIE4111	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design biotelemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution system for telemetry in process plants.
538	Power Electronics and Drives Lab	AEIE4112	Employability & Skill Development - Gain practical knowledge about power electronic devices and simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
539	Industrial Training Evaluation	AEIE4131	Employability & Skill Development - This course has been designed for the students to gain real life working experience by visiting a Process Plant / Industry for a specified period. Thus, each & every student of AEIE should undergo industrial training for 4 weeks, during 6th – 7 th Semester break in reputed Private / Public Sector / Government organization / companies.
540	Advanced Process Control	AEIE4141	Employability & Skill Development - Develop the process models in digital domain and analyze stability of the system in digital domain. Able to develop algorithms for design of various controllers. Learn the architecture of automation systems 6. Familiar with the protocols used for designing of automation systems.
541	Soft Computing	AEIE4142	Employability & Skill Development - Design and analyze the different components of fuzzy controller appropriately to obtain the best possible fuzzy controller that can be applied to any process control systems. Acquire knowledge of different ANN terminologies to apply in solving control problems. Analyze and design algorithms for different supervised and unsupervised learning networks. Illustrate biological background and give idea about basics of genetic algorithm and its application in optimizing controller parameters
542	Power plant Instrumentation	AEIE4143	Employability & Skill Development - Design P&I diagrams for different control loops associated with thermal, hydal and Nuclear power plant. Investigate, formulate and analyze the safety requirements during power plant operation and accordingly able to design instrumentation systems for safety interlocks in power plant. Design Turbine supervisory instrumentation system. Apply engineering knowledge towards the treatment of water for industrial use. Apply contextual knowledge for analysis and measure of pollutant produced by thermal power plant.
543	Instrumentation and Telemetry	AEIE4181	Employability & Skill Development - Select the suitable pressure transducer, flow transducer, level transducer and temperature transducer for industry use. Understand the functional components of voltage, current and frequency telemetry. Familiar with the scheme of transmission of multiple sensor data based on time division multiplexing and frequency division multiplexing.
544	Introduction to Embedded Systems	AEIE4182	Employability & Skill Development - This introductory course helps students to learn the working principles of embedded systems, which might be essential for an automobile company to a company that develops that caters the clients manufacturing consumer electronic and or electrical goods. Design different embedded systems with microcontroller of different memory specification or RAM specification. Design single purpose processors and basic architecture and operation, multipurpose controller-architecture, operation, codes and programming. Understand the application of different RAMs and ROMs and interfacing. Interface microcontroller and design the hardware and software to control the operation of I/o devices like LCDs, Keyboard, Stepper Motor, A/d converter etc.
545	Project I	AEIE4191	Employability & Skill Development - Project should be on any topic having relevance with Electronics, Instrumentation, Electrical or inter-disciplinary field of engineering. Project should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
546	Comprehensive Viva Voce	AEIE4231	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning. Gain confidence and inter-personal skills.
547	Technical Seminar II	AEIE4232	Employability & Skill Development - The main objective of this course work is to encourage self-learning in the field of student's own interest among the emerging areas of technology. The student is expected to do an extensive literature survey in his subjects of interest and present seminar on a research problem, available methods in literature, future trends, etc. to a group of experts.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
548	Analytical Instrumentation	AEIE4241	Employability & Skill Development - Get ideas of different analytical methods like pH analysis, conductivity analysis etc. for liquid sample. Understand UV-VIS , IR spectroscopic techniques for the liquid analysis. Know X-ray spectroscopy and NMR spectroscopy for the analysis of sample. Familiar with gas chromatography and liquid chromatography for sample analysis.
549	Ultrasonic Instrumentation	AEIE4242	Employability & Skill Development - Know about ultrasonic equipments, A, B, and M-scan presentation of test indications and interpretation. Develop knowledge on different ultrasonic methods of applications. Apply the knowledge of ultrasonic instrumentation for non-destructive testing. Applications of ultrasonic instruments for measuring thickness, depth, flow and level. Applications of ultrasonic instrumentations in medical sciences.
550	Digital Control Systems	AEIE4243	Employability & Skill Development - Design of digital control systems with digital controllers through bilinear transformation; digital PID-controller; different class of digital controllers, general synthesis method, dead beat response design, Dahlin design, ringing and placement of poles.
551	Sensor Technology	AEIE4281	Employability & Skill Development - This subject enables students to grab the concepts and application of different mechanical, electrical and acoustic sensors. Acquire the fundamental knowledge in micro sensors, sensor materials, properties and industrial applications. Understand the application of IC technology and photolithography technique in micro sensors. Learn the basics of sensor networking, coding and smart sensors and propose a sensor system design to solve a problem, a very helpful course for working IOT.
552	Control Systems and Applications	AEIE4282	Employability & Skill Development - Models of control devices and systems - dc servomotors, ac servomotors, dc motor speed and position control, synchro. Basic control actions- Introduction to conventional controllers (P, PI, PD and PID) and application.
553	Project II	AEIE4291	Employability & Skill Development - Demonstrate ability to identify and formulate real world engineering problems relevant to society needs. Apply knowledge of circuit design, sensor selection, signal processing, control system, embedded system and programming, etc., to implement the project work with proper time frame. Implement hardware model along with its relevant software programming, conduct experiments, analyze and interpret data and explain them. Develop interpersonal communication skill and demonstrate sound technical knowledge of their project work.
554	Animal Cell Culture & Animal Biotechnology	BIOT4101	increases skill development in cell culture techniques in diagnostics and research
555	Bioseparation Technology	BIOT4102	skill development in separation processes and techniques
556	Food Biotechnology	BIOT4141	increases employment opportunity for food processing and food preservation
557	Environmental Biotechnology	BIOT4142	skill development in environmental engineering and policies
558	Bioprocess & Process Instrumentation	BIOT4143	skill development in separation techniques
559	Modeling & Simulation of Bioprocess	BIOT4161	skill development in knowledge of modeling and simulation of biological pathways
560	Biomaterials	BIOT4162	increases employment opportunity in bioimplants sector
561	Biometallurgy	BIOT4163	increases employment opportunity in metallurgy sector
562	Proteomics and Protein Engineering	BIOT4164	increases skill development in proteomics tools
563	Human Genomics	BIOT4165	increases employment opportunity in human genomics research and analysis
564	Biosensors	BIOT4181	Employability & Skill Development - This subject familiarizes students with bio-recognition elements and introduces them to transducers and biosensors. Knowledge in this subject is beneficial to students for acquiring jobs in clinical and diagnostic sector, industrial sector, food and environment sector, defence sector and a host of other areas.
565	Biopolymers	BIOT4182	increases skill development in production of different products by biopolymer
566	Renewable Energy Technology	BIOT4241	increases employment opportunity in renewable energy sector
567	Tissue Engineering	BIOT4242	increases employment opportunity in tissue manufacturing and pharmaceutical sector
568	Biomedical Engineering	BIOT4243	increases employment opportunity in biomedical instrumentation sector
569	Post Harvest Technology	BIOT4244	increases employment opportunity in crop harvesting sector
570	Metabolic Engineering	BIOT4245	increases skill development in metabolic processes and pathways
571	Medical & Pharmaceutical Biotechnology	BIOT4246	increases employment opportunity in pharmaceutical industries
572	Basic Process Equipment Design	BIOT4247	increases employment opportunity in designing sector and processing sector
573	Computational Biology	BIOT4281	Increases employment opportunity in bioinformatics and drug designing sector Molecular Modeling and Dynamics: introduction to Open MM library; GROMACS as an example of GUI in the public domain; computer based drug design (public domain and proprietary); Mathematical modeling of cell growth kinetics; Embedded systems for computational biology; High throughput data collection, processing and analysis; LCMS, DNA microarrays and other applications; Systems biology and Metabolic Engineering.
574	Non-conventional Energy	BIOT4282	Employability & Skill Development - Application of the concepts of solar energy to design Photovoltaic cells and wind energy to design wind turbine , Understanding the concept of hydrogen energy as a clean fuel and characterize the hydrogen production process etc will enhance employability & develop skills.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
575	Modeling Simulation & optimization	CHEN4103	Employability & Skill Development - students will be able to analyze the given system to mathematically formulate the complete optimization problem required. students will be able to select the appropriate separation process and process equipment, and will be able to apply heuristics for choosing the correct operating methods for the equipment.
576	Industrial Training	CHEN4131	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to a chemical industry
577	Seminar II	CHEN4132	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner
578	Reactor Design	CHEN4141	Employability & Skill Development - The course demonstrate the technique to design reactor that can handle multiphase multicomponent system of species.
579	Industrial Safety & Hazard Analysis	CHEN4142	Employability & Skill Development - Ability to use important technical fundamentals of chemical process safety and to impart basic Students get knowledge that allows to evaluate occupational safety and health hazards in the workplace. They can also be able to determine hazard and potential hazard areas and to adopt appropriate hazard controls. They can analyze the effects of workplace exposures, injuries and illnesses, fatalities.
580	Safety and Hazard Analysis	CHEN4181	Employability : Ability to understand and recognize the important technical fundamentals of chemical process safety and to impart basic knowledge that allows the students to evaluate occupational safety and health hazards in the workplace.
581	Project Management	CHEN4182	Employability & Skill Development - This subject is considered to be fundamental for achieving the target of cost, time and scope of chemical and mechanical engineering activity. This skill will enable students to excel in their respective area of work.
582	Plant Design	CHEN4221	Employability & Skill Development - Students will learn to design a chemical process industry and also can assess the techno-economic feasibility of the the plant.
583	Catalysis & Catalytic Reactor Design	CHEN4241	Employability & Skill Development - Student will learn to identify and formulate problems in chemical and biochemical reaction engineering and find appropriate solutions. Student can able design bioreactors for both enzymatic and live cell catalyzed reactions.
584	Total Quality Management	CHEN4242	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
585	Total Quality Management & Assurance	CHEN4282	Skill development in understanding the significance of quality management inside and outside of the organization, to identify and control the quality of processes, to evaluate the process capabilities of different processes in any business process, to apply modern quality management like Six Sigma techniques. Skill development in various sampling techniques and develop different sampling plans to evaluate quality of various types of defects, to prepare network of activities involved in project for plant design or other business processes , to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method
586	Water Resources Engineering	CIVL4101	Employability: Water resources play an important role in the economic development of a nation. No one can imagine the life of living beings without the consumption of water. A water can use by the nation for various purpose such as hydro electricity, irrigation, etc.
587	Computer Application in Civil Engg	CIVL4111	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
588	Industrial Training Evaluation	CIVL4131	Employability: Industrial training, where a student undertakes a period of training with an organization usually during a semester break, act as an important part in preparing the student for a professional career. With the active involved preparation, the student learns about the industrial demands, skill set and work ethics.
589	Seminar II	CIVL4132	Entrepreneurship: To impart training to the students in collecting materials on a specific topic from journal or other sources and organise them into logical sequence and presenting the matter effectively both orally and as technical report.
590	Advanced Structural Analysis	CIVL4141	Employability: Civil engineers use structural analysis to assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces using matrix method applications.
591	Remote Sensing and GIS	CIVL4142	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
592	Advanced Pavement Engineering	CIVL4143	Employability: The ultimate aim of pavement design is to ensure that the transmitted stresses due to wheel load are sufficiently reduced, so that they will not exceed bearing capacity of the sub-grade. Two types of pavements are generally recognized as serving this purpose, namely flexible pavements and rigid pavements.
593	Hydraulics Structures	CIVL4144	Employability: Without hydraulic structures, the world would be spending half of their time looking and fetching water. Hydraulic structures are built to make life easier, pleasant and secure. The building of these structures not been easy especially when civil engineering was not modernized.
594	Soil Dynamics and Machine Foundations	CIVL4161	Employability: Soil dynamics drive elemental cycles, have controlling roles in ecosystem functions, and are largely determinants of emergent properties (properties not obvious from the study of processes at finer levels of organization), such as decomposition rates, biodiversity, and system stability. A machine foundation necessitates a special concern as they are designed to transmit dynamic loads to soil strata in addition to static loads.
595	Structural Dynamics & Earthquake Engineering	CIVL4162	Employability: Structural dynamics of earthquake engineering: theory and application using Mathematica and Matlab provides civil and structural engineers and students with an understanding of the dynamic response of structures to earthquakes and the common analysis techniques employed to evaluate these responses
596	Environmental Pollution & Control	CIVL4163	Employability : To understand various types of global environmental issues and learn about the different kind of pollution .
597	Advanced R.C.C. Design	CIVL4164	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structures which are of high importance.
598	Building Materials	CIVL4181	Employability & Skill Development - To construct any building, proper materials selection is very important part of the project. This subject prepare the promising engineers suitable for industry and also learn how to build the building with minimum cost and asses the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates, concrete, steel, etc.
599	Hydrology	CIVL4182	Employability: Hydrology has evolved as a science in response to the need to understand the complex water systems of the Earth and help solve water problems. Hydrologists play a vital role in finding solutions to water problems, and interesting and challenging careers are available to those who choose to study hydrology.
600	Environmental Pollution & Control	CIVL4183	Employability: Understand the essential concepts of Air and Noise pollution.
601	Project -I	CIVL4191	Employability: Students undertake a research/ industrial/practical oriented project work under the guidance of a particular faculty. In-depth knowledge on a particular topic helps the student to be industry ready.
602	Construction Planning and Project Management	CIVL4201	Employability : To understand the various construction equipments and its implementations , different building laws , CPM & PERT .
603	Comprehensive Viva Voce	CIVL4231	Employability: The objective of comprehensive viva-voce is to assess the overall knowledge of the student in the relevant field of Engineering acquired over 4 years of study in the undergraduate program .
604	Bridge Engineering	CIVL4241	Employability: Bridge engineering is an engineering discipline branching from civil engineering that involves the planning, design, construction, operation, and maintenance of bridges to ensure safe and effective transportation of vehicles, people and goods
605	Traffic Engineering and Transportation Planning	CIVL4242	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
606	Advanced Foundation Engineering	CIVL4243	Employability & Skill Development -
607	Finite Element Analysis	CIVL4244	Employability: Finite Element Analysis (FEA) is a method of analysing how a part or assembly will perform over its lifetime. FEA enables you to predict potential design issues and therefore minimise risk to your product, profits, and your business.
608	Remote Sensing and GIS	CIVL4281	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.
609	Principles of Surveying	CIVL4282	Employability & Skill Development - Surveying is the art of determining the relative position of various features above, on, or beneath the surface of the earth by means of different instruments. Students learn by their own hand the application of surveying and it is very much helpful to the industry and also develop their skills. The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
610	Project Planning and Management	CIVL4283	Employability & Skill Development - This subject help the students for employability because the students Think of their plan as a roadmap for stakeholders, break the project into a list of deliverables, Talk to their team, identify risks, create a budget, add milestones, set progress reporting guidelines etc.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
611	Project II	CIVL4291	Employability: Students undertake a research/ industrial/practical oriented project work under the guidance of a particular faculty. In-depth knowledge on a particular topic helps the student to be industry ready.
612	Compiler Construction	CSEN4101	Employability & Skill Development - This course teaches the students all the phases of thorough which a compiler runs while translating a code and also to write compiler for a given language. Though the writing a of new compiler does not arise everyday in the industry, still the concepts help a lot to write a cross compiler for translating code from one language to other and many times companies working in DSP need to implement a language with a small set of instructions, though it often happens at assembly level, the concepts of compiler construction are difficult to ignore if one wants to contribute effectively in such projects or products.
613	Compiler Construction Lab	CSEN4111	Employability & Skill Development - It complements the theory course in compiler and helps the students to become confident with the in depth knowledge of how a program is compiled and how it really works; what are the data structures and techniques associated with it.
614	Industrial Training	CSEN4131	Employability & Skill Development - This course allows the students to get an exposure to the projects that are currently ongoing in an industry as an intern or a trainee. They acquire ample knowledge on how to execute real-life projects in the industry.
615	Seminar II	CSEN4132	Employability & Skill Development - Soft skills and presentation abilities constitute an important part of majority job profiles. This subject gives each student the much needed opportunity to work as a team, present to an audience and receive constructive feedback on their performance which helps them to identify areas that need improvement.
616	Information Retrieval	CSEN4141	Employability & Skill Development - This course is a must for students working in Natural Language Processing.(NLP) projects in the companies that develop projects/products requiring NLP. It may be softwares for social media, customer interface or even fraud detection.
617	Advanced Operating System	CSEN4142	Employability & Skill Development - Any system related jobs or companies developing linux based open source software have a need for this expertise.
618	Data Mining and Knowledge Discovery	CSEN4144	Employability & Skill Development - Many companies thrive on mined data from internet or customer data generated from online purchases, or by discovering patterns from financial data. These companies need professionals with the proper training in Data Mining.
619	Cloud Computing	CSEN4145	Employability & Skill Development - The days of proprietary infrastructure is fast receding and in practice more and more companies are becoming confident to keep their valued data on cloud. Under this scenario, many service-oriented companies also get huge projects that require a knowledge of cloud computing in the background and also have dedicated teams looking after cloud aspects. This course helps our students to target those jobs.
620	Natural Language Processing	CSEN4161	Employability & Skill Development - In this age of automation and AI driven industry, NLP is the course that companies look for along with ML in the curriculum, so it helps the students to apply for these high-paying new-age jobs.
621	Cryptography and Network Security	CSEN4162	Employability & Skill Development - As internet banking and online purchases are increasing by leaps and bounds, the cases of fraud related to these technologies are on the rise. The knowledge of cryptography and cyber security have become a dire necessity while implementing these software. A few of our students work in specialized cryptography applications in the industry.
622	Graph Algorithms	CSEN4163	Employability & Skill Development - This course helps in a handful of companies that build software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
623	Parallel Algorithm	CSEN4164	Employability & Skill Development - This advanced course helps students to learn how an algorithm can be executed simultaneously by dividing it into independent sub-algorithms, which is very much required by companies that design processors. Also a lot of research happens on this topic, so for higher studies also this is an important skill.
624	Web Intelligence and Big Data	CSEN4165	Employability & Skill Development - This course is about building 'web-intelligent' applications exploiting big data sources arising in social media, mobile devices and sensors, using new big-data platforms based on the 'map-reduce' parallel programming paradigm. Hence all data driven companies need this expertise.
625	Fundamentals Of Operating Systems	CSEN4181	Employability & Skill Development - Understanding the various design issues in process management, learning of operating system operation, structures etc will enhance employability & develop skills.
626	Web Intelligence and Big Data	CSEN4182	Employability & Skill Development - Understanding on the key issues in big data management and its associated applications in intelligent business and scientific computing, the knowledge of Big Data and web intelligence on industry applications etc will enhance employability, Entrepreneurship & develop skills.
627	Project I	CSEN4191	Employability & Skill Development - As part of this subject students work on a computing problem in a team and try to come up with insights and solutions to the problem, under the guidance of a mentor. This experience of working as a team and the exposure to problem analysis helps to groom them for their future professional commitments.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
628	Distributed Algorithms	CSEN4241	Employability & Skill Development - Behind every computing process and every program design is an algorithm, that guarantees the success of the process when formulated properly. As computation becomes more distributed, the algorithm also evolves along with it. A knowledge of distributed algorithm design is must for many job profiles that deal with distributed systems.
629	Approximation Algorithms	CSEN4242	Employability & Skill Development - Optimization problems that are NP-hard are an important category of problems in computer science. Studying efficient approximation algorithms to find appropriate solutions to such problems prepare students to tackle research oriented job profiles that need knowledgeable candidates to tackle complex problems.
630	Pattern Recognition	CSEN4244	Employability & Skill Development - Extracting meaningful features from a vast repository of media resources is a very important line of work in recent times that arm employers with a wealth of information. Pattern recognition teaches the student how to empower machines with human recognition intelligence and thus extract useful and critical information.
631	Social Network Analysis	CSEN4245	Employability & Skill Development - In this current era of customised products and target oriented research and recommendations this subject is an essential addition. Students undertaking this subject learn how to look for patterns of relation among people and groups and thus enabling them make important deductions.
632	Mobile Computing	CSEN4246	Employability & Skill Development - The underlying network architecture of data communication in a mobile environment is a must to have knowledge for any computer science engineer. Knowing the concepts of such data communication is sure to give students an edge in the job market.
633	Distributed Databases	CSEN4261	Employability & Skill Development - Most job profiles in computer science have one aspect in common and that is data storage. This is even more relevant in the current times of big data where the amount of data being generated has increased manifold and this data needs to be stored and accessed in a distributed environment. This subject provides knowledge that will familiarize students with the nuances of data storage and access.
634	Image Processing	CSEN4262	Employability & Skill Development - Any company working in computer vision (such as remote sensing, pattern matching) needs students who have attended this course.
635	Soft Computing	CSEN4263	Employability & Skill Development - Any project that requires to solve some NP-complete (hard) problems in real time, which are not solvable in polynomial time at all need such a course.
636	Machine Learning	CSEN4264	Employability & Skill Development - This is a one-level up course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc. Right now whole computation system is data driven and machine learning helps students to use it as a tool to provide data-driven services.
637	Real Time & Embedded System	CSEN4265	Employability & Skill Development - This advanced course helps students to learn the real-time working principles of embedded systems, how they communicate and process among themselves in real-time, which is very much required in this modern era of IOT.
638	Distributed Databases Lab	CSEN4271	Employability & Skill Development - Distributed Database Systems lab simulates real-world, hardware, software, and command-line interface environments. The DDBMS lab course covers fundamental concepts necessary for designing, using, and implementing database systems and applications; database modeling and design; languages and models provided by database management systems; and database system implementation techniques.
639	Image Processing Lab	CSEN4272	Employability & Skill Development - It complements the theory course in image processing and student learns various matlab and python based tools to do computations on various type of images, which is a must before joining any company in the computer vision or handling image processing projects.
640	Soft Computing Lab	CSEN4273	Employability & Skill Development - Students get a chance to do some basic projects, where various soft computing techniques like fuzzy logic, genetic algorithms and other evolutionary algorithms are learnt through real-life problems.
641	Machine Learning Lab	CSEN4274	Employability & Skill Development - It complements the theory course in Machine Learning and student learns various tools like tensorflow, azure and other python based tools to operate on various data-driven real life problems.
642	Real Time & Embedded System Lab	CSEN4275	Employability & Skill Development - Students get a chance to work on some Arduino projects that give the test of making something work on their own before joining the industry.
643	Fundamentals of RDBMS	CSEN4281	Employability & Skill Development - Master the basic concepts and understand the applications of database systems. Understand the basic database storage structures and access techniques. 6. Distinguish between good and bad database design, apply data normalization principles, and be aware of the impact of data redundancy on database integrity and maintainability. Construct queries and maintain a simple database using SQL. Apply database transaction management and database recover.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
644	Project II	CSEN4291	Employability & Skill Development - The team work skills and problem analysis skills that the students start to learn with the subject Project 1 are further intensified in this subject. The focus here is more on arriving at a solution, in the form of a research paper, or a website design etc. and presenting the solution to a distinguished audience. The experience of team work, solution-oriented approach and presentation skill help the students in acquiring and pursuing lucrative jobs.
645	RF & Microwave Engineering	ECEN4101	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills.
646	Coding & Information Theory	ECEN4102	Employability & Skill Development - Knowledge of entropy, mutual information and channel capacity for all types of channels, Estimation of the merit of various methods for generating and detecting different types of error correcting codes will develop the skill.
647	Advanced Communication Systems	ECEN4103	Employability & Skill Development - Understanding on different wireless networks and their operations, the current multiplexing and modulation schemes will enhance employability & develop skills.
648	RF & Microwave Engineering Laboratory	ECEN4111	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills
649	Advanced Communication Systems Laboratory	ECEN4113	Employability & Skill Development - Hands on experiments on working of fiber optic links ,various real time applications of wireless communication system will enhance employability & develop skills.
650	VLSI Design Automation	ECEN4181	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques that are required to build a chip in a precise manner, which is done by a robotic arm and at the nano meter scale, so precision really matters. All these skills are very much required in a multi-national EDA company. Determine logic and performance of CMOS combinational as well as sequential logic and apply the lambda based design rules. Construct physical layout design and stick diagram of digital gates. Classify between VLSI design cycle, style and methodology and also build various stages of miniaturization. Make use of various synthesis flow and HDL modeling in ASIC semi custom design. Build different logical synthesis algorithm
651	Principles of Communication systems	ECEN4183	Employability & Skill Development - In this modern era of fast communication one must know all the different principles of communication, the course provides the students with all the basics that are required to work in a company that develops software for voice or data communication.
652	Remote Sensing using Satellites	ECEN4241	Employability & Skill Development - Realization of the physical, architectural and networking issues of the satellite system, concepts of basics of remote sensing principles and technology etc will enhance employability & develop skills.
653	Cellular and Satellite Communications	ECEN4281	Employability & Skill Development - Identify GSM and CDMA Cellular architecture and its various parameters. Multiple access techniques used for Satellite Communication. Understand various orbits, orbital parameters, satellite launch vehicles etc. Design uplink and downlink for satellite networks.
654	VLSI Design	ECEN4282	Employability & Skill Development - This course helps the learners to learn the basic principles of building various analog and digital circuits from scratch. Starting from CMOS. All these are very much required in a multi-national semiconductor company.
655	VLSI Testing & Verification	ECEN4283	Employability & Skill Development - Without testing no chip can go to the market and this course provides the learners all the knowledge of how to write a software that can perform the pre and postbond testing.
656	Seminar-I	ELEC4031	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.
657	Seminar-II	ELEC4032	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.
658	Electric Drives & Power Utilization	ELEC4101	Employability -Study of different drives system with its practical application and different braking schemes .Explain application field of drives in traction system . Knowledge of Other application in the field of electric heating ,welding and illumination engineering.
659	High Voltage Engineering	ELEC4102	Employability/Entrepreneurship-Generation, Measurement and Testing of high voltage
660	Electric Drives Lab	ELEC4111	Employability -Application of drives by using power electronics circuit for smooth control of various types of motor's speed.
661	Electrical Machine Design	ELEC4121	Employability/Entrepreneurship in Machine Design, design and develop transformer, induction motor, heating element and reactor, electronic

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
662	Advanced Power System	ELEC4161	Employability & Skill Development - Economic dispatch and Unit Commitment helps to know the effective usage of the power flow in GRID. Skill development to analyze the load Frequency control and voltage control. Knowledge of travelling waves, generation of overvoltages on transmission lines & its protection, different compensation techniques in power system and the application of FACTs provides employability & skill development in Power System. Introduce HVDC transmission.
663	Advanced Control System	ELEC4162	Employability - In the design for mathematical modeling of finding Transfer function of physical systems , Time response, compensting techniques etc,
664	Circuit Theory Analysis	ELEC4182	Employability : to understand network equation , laplace transform , graph theory , two port Networks etc .
665	Project - I	ELEC4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints
666	Electrical System Design	ELEC4221	Employability- Design power distribution system, installation design of multistoried residential building, designing of a substation, design of control circuit of lift mechanism, road lighting scheme, energy efficient lighting scheme.
667	Fundamentals of Illumination Engineering	ELEC4282	Employability : to get aquinted with the laws of Photometry for calculation of illumination levels for different lighting operations .
668	Project - II	ELEC4291	Encourages enterpreneurship, skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints
669	Professional Development	HMTS4121	Entrepreneurship: The start-up ecosystem in India- Why entrepreneurship?, Indian tech start-up landscape, Stand-up India policies, funding agencies, market development, trends and best practices E-Commerce- India as a growing E-commerce market, Possibilities of growth, funding, niche retailers Make in India- New processes, Investments, Focus sectors, Makers of Make In India, Opportunities, Policies.
670	Organizational Behaviour	HMTS4201	Employability & Skill Development - A comprehensive knowledge of interpersonal and leadership skills, motivation, attitude and perception are essential for any job engagement. Organizational behaviour aims to empower students with such essential knowledge and make them ready to take on any responsibility with confidence and conviction.
671	Project Management	HMTS4202	Employability & Skill Development - Project management is considered to be fundamental for achiving the target of cost, time and scope of any engineering activity. This skill will enable students to excel in their respective area of work.
672	Bioethics & IPR	HMTS4203	Employability & Skill Development - increases skill development in bioethics guidelines, patenting and trademark
673	Introduction to Industrial Sociology	HMTS4281	Employability & Skill Development - Industrial sociology is an applied discipline. It is concerned with the study of human relations as they grow and operate in the field of industries. It deals with the sociological concepts that have relevance to industry. It concentrates upon the social organizations of the work place or industry.
674	Critical Gender Studies	HMTS4282	Employability: Gender studies in the two-year program is defined as “critical” Gender Studies, signaling the ways in which students are trained to critically analyze established ideas, systems, and inequalities that decrease the possibilities for women and men to fully reach their human potential.
675	Elementary Spanish for beginners	HMTS4283	Employability & Skill Development - In this course, students will learn both basic and advanced Spanish vocabulary, grammar and pronunciation, that helps in companies who headquarters in Spain or Latin American countries.
676	Internet Technology	INFO4101	Employability & Skill Development - Understanding best technologies for solving web client/server problems, analyze and design real time web applications, use Java script for dynamic effects and to validate form input entry.
677	Image Processing	INFO4102	Skill development in image processing and image programming helps in employability.
678	Internet Technology Laboratory	INFO4111	Employability & Skill Development - Gain knowledge in client side programming ,interactive web applications .
679	Image Processing Laboratory	INFO4112	Skill development in image processing and image programming helps in employability.
680	Industry Competence Laboratory	INFO4121	Employability & Skill Development - Helps in employability through a project with industry orientation aspects directly suggested by experienced person from Software Industry. Also develop skill for creating Requirement Specification of allotted project with industry specified Requirement Specification Standard. Develope manual testing modules as guided by industry expert.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
681	Industrial Training Evaluation	INFO4131	Employability & Skill Development - Helps in employability through a real life industry environment and also work as a part of the team . Gather experience of team work ,work sharing and work scheduling in real time scenario.
682	Distributed Operating System	INFO4141	Employability & Skill Development - Learn about operating system design and implementation including Operating system structure,Synchronization, communication and scheduling in parallel systems
683	Cyber Law & Security Policy	INFO4142	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.
684	Fundamentals of Cloud Computing	INFO4143	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing.
685	Cyber Crime & Cyber Security	INFO4181	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.
686	Cloud Computing	INFO4182	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing. Understanding of the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc & system, network and storage virtualization and outline their role in enabling the cloud computing system model will enrich employability & develop skills.
687	Project - I	INFO4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints.
688	Comprehensive Viva Voce	INFO4231	Employability & Skill Development - Gain knowledge about contemporary issues in various subjects.
689	Parallel Computing	INFO4241	Employability & Skill Development - The use of parallel processing for running advanced application programs efficiently, reliably and quickly.
690	Natural Language Processing	INFO4242	Employability & Skill Development - The ability of a computer program to understand human language as it is spoken.
691	Cryptography & Network Security	INFO4243	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet.Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network.
692	Soft Computing	INFO4244	Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
693	Fundamentals of Cryptography	INFO4281	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet.Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network. Understanding of various tools and protocols for different levels of security, principles of public-key cryptosystems, hash functions, and digital signature will enhance employability & develop skills
694	Soft Computing Application	INFO4282	Skill development to identify interactive problems, reproduce optimal solution, to determine complexity of computation, to assemble different techniques to sketch a hybrid system, able to interpret the problems in terms of time and space, justify optimal solution and able to predict the running time of the program Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
695	Project - II	INFO4291	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints.
696	Operation Research and Optimization techniques	MATH4181	Employability & Skill Development - Operations Research (OR) is a field in which students use mathematical and engineering methods to study optimization problems in Business and Management, Economics, Computer Science, Civil Engineering, Electrical Engineering, etc. This subject focuses on deterministic optimization techniques, which is a major part of the field of OR followed by several efficient algorithms for solving linear programs, integer programs, and nonlinear programs.
697	Linear Algebra	MATH4182	Employability & Skill Development - This course covers matrix theory and linear algebra, emphasizing topics useful in other disciplines. Linear algebra is a branch of mathematics that studies systems of linear equations and the properties of matrices. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering and most importantly in any company that requires machine learning for its projects

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
698	Probability and Stochastic Process	MATH4281	Employability & Skill Development - This course makes students gain familiarity with probability and stochastic processes concepts which they need for their experiments and research. It also covers theoretical concepts of probability and stochastic processes pertaining to handling various stochastic modeling. This course provides random variable, distributions, moments, modes of convergences, classification and properties of stochastic processes, stationary processes, discrete and continuous time Markov chains and simple Markovian queueing models, all of this is very much essential for companies using machine learning to boost up their sales.
699	Advanced Computational Mathematics and Graph theory	MATH4282	Employability & Skill Development - Advanced Graph Theory focuses on problem solving using the most important notions of graph theory with an in-depth study of concepts on the applications in the field of computer science. This course provides an in-depth understanding of Graphs and fundamental principles and models underlying the theory and algorithms. Emerging applications of Graph Theory in Computer Science domain will be covered for significant impact. Through this subject students will have intimate knowledge about how the graph theory play an important role to solve the technology driven and research oriented problems. It is a shot in the arm for the students who pursue higher studies in Computer Science as well as those who work for companies working in EDA, traffic simulation etc.
700	Design And Analysis Of Algorithms	MCAP2101	Skill development to design and analysis of algorithms.
701	Data Communication And Computer Network	MCAP2102	Employability in the field of computer networking.
702	Database Management Systems Ii	MCAP2103	Employability in the field of database applications.
703	Operating System	MCAP2104	Skill development in the field of system administration.
704	Algorithm Lab	MCAP2111	Skill development to understand the algorithm.
705	Unix And Network Programming Lab	MCAP2112	Employability in the field of networking and understand the concept of UNIX operating system.
706	Dbms Ii Lab	MCAP2113	Employability through familiarizing with PL/SQL programming including stored procedures, stored functions.
707	Software Engineering	MCAP2201	Entrepreneurship for design, development and implementation of software based on requirements.
708	Web Technology	MCAP2202	Employability in the process of understanding the concept of Web Technologies along with applications.
709	Computer Graphics	MCAP2203	Skill development to understand the detail of Computer Graphics.
710	Intelligent Systems	MCAP2204	Skill development to gather and analyze data and communicate with other system.
711	Software Engineering Lab	MCAP2211	Entrepreneurship for developing a quality software for customer as per requirements.
712	Web Technology Lab	MCAP2212	Employability for developing the web pages using HTML, CSS, JavaScript, XML, PHP with SQL for database connectivity
713	Graphics Lab	MCAP2213	Employability in the field of Graphic designing.
714	Power Plant Engineering	MECH4101	Employability & Skill Development - Coal based thermal power plant, Hydroelectric power plant, Nuclear Power plant are taught in this subject which are very core knowledge in Mechanical Engineering and key to employment in Power Sector.
715	Advanced Manufacturing Technology	MECH4102	Employability & Skill Development - This subject enhance in precision manufacturing by smart technological systems, lowers error rates and product failures, overall reducing huge costs historically faced by manufacturers.
716	Operations Research	MECH4103	Employability & Skill Development - Understanding and acquiring the knowledge for problem solving & decision making from various alternatives from a large number of constraints must be learned by the students for selecting the least risk with an optimum plan in the current business scenario.
717	IC Engine Lab	MECH4111	Employability & Skill Development - Practical knowledge on (i) working principle of IC engines with their operational characteristics and (ii) various components like valves, fuel injectors etc. will be an added advantage for students working in automotive industries.
718	Machining & Machine Tools Lab	MECH4112	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools like lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various components. This skill will help students to select/ design/ maintain machine tools in an industry.
719	Industrial Training Evaluation	MECH4131	Employability & Skill Development - Get an idea of industrial set up and its associated complexity, evaluate the classroom knowledge against the real life application, learn the sequence of activities that lead to a finished product from the raw material and learn about activities other than design and manufacturing that are necessary for producing the goods and services.
720	Computational Methods in Engineering	MECH4142	Employability & Skill Development - Different numerical methods and its application on engineering are learned and apply them in R&D sector or research
721	Quantity Production Method	MECH4143	Employability & Skill Development - More than 60% of the manufacturing Industries have restructured their factories or the manufacturing systems to become lean producers (less wastages) , making goods of superior quality ,cheaper, faster in a flexible way.Students should be well versed on the same & to be responsive in their respective Industrial environment.
722	Computational Fluid Dynamics	MECH4144	Employability & Skill Development - Students will get job opportunities in various emerging technologies including R&D sectors.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
723	Quantitative Decision Making	MECH4181	Entrepreneurship : Understand the meaning and appreciate importance of Quantitative Decision Making.
724	Project I	MECH4191	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.
725	Advanced Manufacturing Lab	MECH4211	Employability & Skill Development - Students program and run most advanced CNC Lathe, Electro Discharge Machine and Robot. They will be in a position to successfully run such machines present in modern industries.
726	Design of an Industrial Product	MECH4221	Employability & Skill Development - Develop manufacturing drawings of the components and General Assembly drawing of the complete product/ system along with its Bill of Material and this very much helpful for direct employability.
727	Comprehensive Viva Voce	MECH4231	Employability & Skill Development - This will be an evaluation of the student's overall mechanical engineering concept and ability to grasp all the 8 semester courses undertaken by the student and it is directly helpful for employability.
728	Mechanical Handling of Materials	MECH4281	Employability : To Interpret the importance of materials handling
729	Aerodynamics	MECH4282	Employability : to Learn fundamental physical and analytical principles of aerodynamics, Apply the knowledge of aerodynamics in design of turbo-machine blades, vehicles etc
730	Project II	MECH4291	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.
731	Energy Management and Audit	REEN6101	Employability & Skill Development - Student can learn a systematic, one-time procedure and a long-term strategy dedicated to continuous improvement and energy efficiency. They can learn the methodology of energy audit process and its classification. Student can also classify industry from energy consumption aspect.
732	Renewable Energy III	REEN6102	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
733	Renewable Energy Laboratory	REEN6111	Employability & Skill Development - Students will learn the skill to handle equipment that can produce and measure renewable energy from sun, wind and biomass.
734	Energy Transmission Technology	REEN6141	Employability & Skill Development - Student will learn how energy is transmitted over long and short distance. They will also understand the power grid management. Student will learn how renewable power can be fed to the grid.
735	Energy Trading and Pricing	REEN6142	Employability & Skill Development - Student can learn about energy market organisation and design. They can get an exposure on how energy is traded globally and how it is priced.



**Mapping of courses to employability / entrepreneurship / skill development for the year 2018-19**

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	Advanced Digital Signals and Systems	AEIE5101	Employability & Skill Development - Design digital FIR and IIR filters according to the given specification. Realize a digital filter structure from its transfer function. Understand theory of multirate DSP and adaptive filtering techniques, solve numerical problems. Understand theory of prediction, solution of normal equations and methods of spectral estimation.
2	Programming Language for Embedded IOT system	AEIE5102	Employability & Skill Development - Understand the key features, design challenges and related to IoT systems. Learn the architecture of NodeMCU and develop IoT systems using it. Demonstrate working knowledge of Micro Python. Design an IoT system with functional requirements for hardware components including processor, networking components and sensors. Develop an IoT system with along with applications of cloud.
3	Research Methodology and IPR	AEIE5103	Employability & Skill Development - Understand research problem formulation and its solution approaches. Analyze research related information. Learn how to write report and research proposal following research ethics. Judge importance of intellectual property and patent rights and learn the process of obtaining them.
4	Micro-Electronic Devices and Circuits	AEIE5131	Employability & Skill Development - Detail analysis Op-Amp circuits to understand loading effects in application circuits. Select MOS transistor as per datasheet parameters to design a simple current mirror. Analyze the DC performance of single-stage analog amplifiers containing these circuit elements. Compute terminal voltage and current characteristics for MOS transistors under a variety of conditions.
5	Medical Instrumentation	AEIE5132	Employability & Skill Development - Understand the physiology of biomedical systems and different methods in the design of biomedical instruments. Learn the different methods of medical imaging systems, concepts related to the operations and analysis of biomedical instruments. Apply it in the design of different assisting therapeutic and diagnostic medical devices.
6	Instrumentation and Industrial Automation	AEIE5133	Employability & Skill Development - Learn various process variable measuring instruments. Learn to read and draw the P&I diagrams. Apply the knowledge of various control methodologies in industrial automation. Learn industrial signal transmitter and safety in handling industrial instruments. Explain the process automation and architecture.
7	Mechatronics	AEIE5141	Employability & Skill Development - Integrate mechanical, electronics, control and computer engineering to model mechatronic systems. The complete design building, interfacing and actuation of a mechatronic system for a set of specifications. Learn different types of interface buses, communication networks, A/D conversions, DAS, data recording and logging etc required for mechatronic systems.
8	Advanced Digital Control Systems	AEIE5142	Employability & Skill Development - Principles for design of Digital Control system and will gain knowledge of implementing for industrial applications. Developing algorithms for applications based various digital controllers and analysis of discrete control systems using various time and frequency domain tools. Aware of advanced understanding of adaptive and self tuning principles and applications.
9	Advanced Optical Instrumentation	AEIE5143	Employability & Skill Development - Learn the techniques of communications using optical fiber. Learn the structures and performance of photo detectors (like photo diode, PIN diode, APD etc). Explain the techniques of measurement of distance, length, velocity, acceleration, current, voltage using laser. Acquire knowledge on basic principle of holography and its uses in different fields such as nondestructive testing, medical field etc.
10	Digital Signal Processing LAB	AEIE5151	Employability & Skill Development - MATLAB programs to determine time domain properties of the discrete time signals. Determine FFT and DFT of a discrete time signal. Design and implement FIR and IIR digital filters in MATLAB. Implement real time FIR and IIR digital filters and FFT algorithm using DSP kit like C6713 DSK.
11	Programming Language LAB	AEIE5152	Employability & Skill Development - Design and conduct experiments with input and output devices using a Node MCU. Perform programming with IIoT cloud service using low power microcontrollers and Raspberry Pi. Interface a sensor with Node MCU for IoT applications. Implement Android Things app using Java ME/Kotlin. Perform programming with MicroPython.
12	Embedded Systems	AEIE5201	Employability & Skill Development - Learn the architecture of AVR microcontrollers and develop embedded systems using it. Demonstrate working knowledge of embedded systems software with Linux and Python. Complete design of an embedded system with functional requirements for hardware and software components including processor, networking components and sensors, along with applications, subsystem interfaces and middleware.
13	Process Control System Design	AEIE5202	Employability & Skill Development - Process mathematical modeling and study the techniques of modeling. Understand the process dynamics in general and analyze it in few industrial applications. Design process control system applying different linear, non-linear and soft-computing techniques. Employ proper system identification technique to identify unknown system and acquire knowledge of computer control.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
14	Micro Sensor Science and Techonology	AEIE5231	Employability & Skill Development - Apply the concepts of IC fabrication in sensor as well as semiconductor technology. Understand the micromachining processes (Bulk/ Surface /LIGA) and fabrication steps viz. deposition (CVD, Stuttering/ epitaxy, ion implantation etc.), lithography, etching (dry/wet, RIE/ DRIE) of micro-sensors. Understand the packaging/ testing of microsensors along with signal conditioning circuitry in real time systems. Analyze the application of smart sensors in IoT and medical/ aro-space/telecommunication/ instrumentation fields.
15	Advanced Power Electronics	AEIE5232	Employability & Skill Development - DC Drive operations and implementations. Compare between performance of Voltage source and current source inverters Differentiate among multi-level inverters. Analyze speed and position control methods of DC motors. Explain control of induction motors. Explain control mechanisms and models of HVDC and HVAC Transmission lines
16	Instrumental Methods of Analysis	AEIE5233	Employability & Skill Development - Different spectroscopic methods and understand their use. Identify different components of spectrometers and acquire knowledge about their functioning. State the fundamental properties of different types of chromatography and able explain their working principle and application. Give comprehensive idea about Electron microscopy.
17	Digital Image Processing	AEIE5241	Employability & Skill Development - Learn how images are formed, sampled, quantized and represented digitally and processed by discrete, linear, time-invariant systems. Apply transformation algorithms such as DFT, DCT, Discrete Sine, Walsh, Hadamard,Slant, Haar, KLT, SVD and Wavelet transform to any given image. Compress a given image by applying lossy and loss less image coding techniques. Perform image enhancement, restoration, morphological operation and segmentation of a given image. Analyze a given image by extracting features from it and by using object recognition techniques.
18	Statistical and Bio-signal Processing	AEIE5242	Employability & Skill Development - Case study-I: Application to biomedical signals: Analysis of continuous EEG signals, Single channel analysis; Multiple channel analysis: Mapping; Elimination of artifacts; sleep EEG analysis. Case study-II: Application to biomedical signals: Analysis of continuous ECG signals: Measurements, Processing of ECG, Artifact removal, Statistical methods and models for ECG; Heart rate variability: Time-domain methods of HRV analysis; Frequency-domain methods of HRV analysis.
19	Industrial Internet of Things	AEIE5243	Employability & Skill Development - Determine the IIoT architecture and application in various fields. Outline the concept of NB-IoT and LoRa. Realize the importance of security and privacy issues in IIoT. Interpret the concept of IIoT and M2M. Point out the applications of IIoT in various industries.
20	Embedded Systems LAB	AEIE5251	Employability & Skill Development - Perform programming with PORT, ADC and I2C bus registers in an AVR microcontroller. Interface a sensor with and AVR microcontroller and monitor its input by displaying the measured value in a PC. Implement USB communication between a Raspberry Pi and Arduino. Perform interfacing with GPIO of Raspberry Pi.
21	Process Control System Design Lab	AEIE5252	Employability & Skill Development - Understand the activity and importance of Boiler Drum in an industry. Calibrate and test the instruments. Simulate, tune and control different processes. Understand principle of modeling and control through experiments.
22	Term Paper and Seminar	AEIE5293	Employability & Skill Development - Understand of contemporary/emerging technology for various processes and systems. Learn how to write a technical document. Demonstrate the ability to deliver technical seminar. Interact effectively with audience to share knowledge and views.
23	Chemistry	CHEM1001	Employability & Skill Development - Development of New Material For Novel Applcation. Understanding the operating principles and reaction involved in batteries and fuel cells and their application. Knowledge of synthesizing Nanomaterials and their applications in industry, carbon nano tube technology is used in every industry now-a-days. Ability of synthesizing bio fuels as a renewable and environment friendly alternative source for natural fuel.
24	Chemistry Lab	CHEM1051	Employability & Skill Development - Able to determine the alkalinity, chloride ion present and total hardness and amount of calcium and magnesium in a given water sample. Able to develop titration skill. Chemistry teaches useful skills. Because it is a science, learning chemistry means learning how to be objective and how to reason and solve problems. Helps you to understand current events, including news about petroleum, product recalls, pollution, the environment and technological advances
25	Programming for Problem Solving	CSEN1001	Employability & Skill Development - It gives the basic knowledge of programming, teaches how to write loops, use pointers in C, in short teaches for the first time how to code in procedural programing language. It is basically the bread and butter of a computer science engineer.
26	Programming for Problem Solving Lab	CSEN1051	Employability & Skill Development - Teaches them the basics of programming from scratch using C. So this is the single most important subject who chooses a programmer's job in life, and the majority of the studnets choose to do so.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
27	Advanced Data Structures	CSEN5101	Employability & Skill Development - Teaches the advanced Data Structures such as skip list, quad tree, range tree, kd tree along with some basic data structures. For all the new-age companies that need a programmer to code up randomized algorithms and know super-fast search techniques, this is a must course.
28	Research Methodology and IPR	CSEN5102	Employability & Skill Development - Teaches the basic principles of research and ethical values that are required to carry forward a research. Also teaches how to protect intellectual property, the patent laws and their philosophy. These are very much required in any R&D based company.
29	Machine Learning	CSEN5131	Employability & Skill Development - This is an advanced course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc. Right now whole computation system is data driven and machine learning helps students to use it as a tool to provide data-driven services.
30	Advanced Wireless and Mobile Networks	CSEN5132	Employability & Skill Development - This advanced course helps the students to learn the working principles of mobile computation and wireless communication from scratch and also introduces the advanced topics like 4G, 5G networks and their associated security issues and their solutions. In this modern era of high mobile penetration, this is very much required by any mobile company.
31	Introduction to Intelligent Systems	CSEN5133	Employability & Skill Development - This is an one-level up course from the undergraduate AI course, where the students learn from scratch the various modern day tools like genetic algorithm, fuzzy logic, neural networks etc. These all are very much required in AI driven companies.
32	GPU Computing	CSEN5134	Employability & Skill Development - This course helps students to learn how computation power can be increased by introducing GPU in normal computing device. Today all AI, Machine learning or Bigdata based companies requires huge amount of computing power, a student learns how all these can be smoothly managed after learning this course.
33	Image Processing	CSEN5135	Employability & Skill Development - Any company working in computer vision (such as remote sensing, pattern matching) need students who have attended this advanced course.
34	Data Science	CSEN5141	Employability & Skill Development - This Course will help the students to know how to handle data, how to cure it, process it and also store it efficiently. All the concepts they will learn like Supervised, Un-supervised learning, Data Processing, Clustering, Classification are going to help them after they have studied this course in their work as Data Engineers.
35	Distributed Systems	CSEN5142	Employability & Skill Development - They get the knowledge and concept of distributive operating systems and their working principle, which is very much required in today's jobs requiring distributed implementation of the software.
36	Wireless Sensor Networks	CSEN5143	Employability & Skill Development - This is basic course that deals with how devices can communicate effectively and relentlessly without any noise and also their working principles. These all are very much required in this modern era of IOT devices.
37	Digital Forensics	CSEN5144	Employability & Skill Development - This course helps the students to deal with identifying all digital grievances and their management, which is very much required when every thing is digitalized.
38	Computational Biology	CSEN5145	Employability & Skill Development - Students get a knowledge how computation can be embedded in bio science. From DNA sequencing to pattern matching, evolutionary clustering all complex computations will help the students to get a job in pharmaceutical companies or biological research labs.
39	Machine Learning Lab	CSEN5181	Employability & Skill Development - It complements the theory course in Machine Learning and student learns various tools like tensorflow, azure and other python based tools to operate on various data-driven real life problems.
40	Advanced Wireless and Mobile Networks Lab	CSEN5182	Employability & Skill Development - Various tools like OTCL, Qualnet Network Simulator all complements the theory course and helps students to deal with many real time problems. These all help them in industry also.
41	Introduction to Intelligent Systems Lab	CSEN5183	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
42	GPU Computing Lab	CSEN5184	Employability & Skill Development - Students will be dealing with parallel programming using CUDA. It will help them in industries where huge amount of computations are required.
43	Image Processing Lab	CSEN5185	Employability & Skill Development - It complements the theory course in image processing and student learns various matlab and python based tools to do computations on various type of images, which is a must before joining any company in the computer vision or handling image processing projects.
44	Advanced Algorithms	CSEN5201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement implementing complex algorithms and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
45	Soft Computing	CSEN5202	Employability & Skill Development - Any project that requires to solve some NP-complete (hard) problems in real time, which are not solvable in polynomial time at all need such a course.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
46	Data Preprocessing and Analysis	CSEN5231	Employability & Skill Development - Any Data Science or Machine learning based project in the industry requires processed, structured data and this course actually helps the students to understand how to extract useful meaningful data from an unorganized unprocessed data.
47	Secure Software Design and Enterprise Computing	CSEN5232	Employability & Skill Development - This course helps the students to know the procedure to build secured software and also to deploy them in various platforms. This knowledge is pretty much required in every Software MNCs.
48	Computer Vision	CSEN5233	Employability & Skill Development - This course helps the students to learn from scratch like detecting edges to advanced levels like using KNN, ANN models to recognise video as well as images. All these features are very much desirable for Video and image processing industries.
49	Theory of Computation	CSEN5234	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course.
50	Computational Geometry	CSEN5235	Employability & Skill Development - This advanced topic deals with various geometric approximations as well as various range searching techniques, which are very much useful for not only in EDA based companies as well as required for any companies developing search engines.
51	Human and Computer Interaction	CSEN5241	Employability & Skill Development - This topic is very useful for those companies which focus on designing front-end GUI design. So this a must course for students who want to be placed in Software MNCs.
52	Graph Algorithms	CSEN5242	Employability & Skill Development - This course helps in a handful of companies that builds software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
53	Cloud Computing	CSEN5243	Employability & Skill Development - The days of proprietary infrastructure is fast receding and in practice more and more companies are becoming confident to keep their valued data on cloud. Under this scenario, many service-oriented companies also get huge projects that require a knowledge of cloud computing in the background and also have dedicated teams looking after cloud aspects. This course help our students to target those jobs.
54	Algorithms for VLSI CAD	CSEN5244	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques that are required to build a chip in a precise manner, which is done by a robotic arm and at the nano meter scale, so precision really matters. All these skills are very much required in a multi-national EDA company.
55	Spatial Informatics and GIS	CSEN5245	Employability & Skill Development - This course is very much required by students working in remote sensing and GIS companies for building MAPs to find natural resources.
56	Advanced Algorithms Lab	CSEN5251	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
57	Soft Computing Lab	CSEN5252	Employability & Skill Development - Students get a chance to do some projects, where various soft computing techniques like fuzzy logic, genetic algorithms and other evolutionary algorithms are learnt through real-life problems.
58	Term Paper and Seminar	CSEN5293	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry. It also gives an exposure to the latest research domains that they are going to explore in depth during their final year projects.
59	Disaster Management	DIMA5116	Employability & Skill Development - Demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives. Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations. Critically understand the strengths and weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in.
60	Basic Electronics	ECEN1011	Employability & Skill Development - Principles of operation of semiconductors, ideas about the building blocks like diodes, transistors, FETs, OPAMPs, rectifier circuits, amplifier, distortion, biasing etc. Analysing various electronic circuits and devices. Design different application specific circuits associated with diodes operating both in forward and reverse bias. Analyze various biasing configurations of Bipolar Junction Transistor and categorize different biasing circuits based on stability. Design and implement various practical purpose electronic circuits and systems meant for both special purpose and general purpose and analyze their performance depending on the type of required output and subsequently the applied input.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
61	Basic Electronics Laboratory	ECEN1061	Employability & Skill Development - This course gives a hand on experience handling of devices, biasing properly, plotting graphs to understand behaviour of devices, handling of instruments to measure parameters.
62	Antenna and Radiating Systems	ECEN5101	Employability & Skill Development - Students will come to know about Antenna – Radiation, VSWR, aperture and their importance, Types of antennae and antenna arrays including microstrip antenna, Testing principles of antennae, EMI and EMC and associated hazards, Different propagation phenomena and QoS of radio links and their analysis which in turn will enhance their Employability.
63	Wireless and Mobile Communication	ECEN5102	Employability & Skill Development - The students will understand the challenges of wireless and mobile communication. They will be able to analyse the factors like fading, SNR. The students should be able to explain the working of a cellular system- both GSM and CDMA. They will be able to analyse performance of cellular and other wireless networks enhancing their employability in communication Industry and allied services
64	Research Methodology and IPR	ECEN5103	Employability & Skill Development - Students will be able to Understand research problem formulation. They will be able to analyze research related information, understand the ultimate importance of ideas, concept and creativity. they will also understand Importance of IPR for individuals and nations. Such knowledge definitely enhances skill development for research which is in alignment with Make in India concept.
65	Wireless Ad Hoc and Sensor Networks	ECEN5131	Employability & Skill Development - Students will be able to analyze a situation and interpret a data in ad hoc networks. Students will acquire knowledge to learn and apply modeling based approach through the extensive use of simulator tools. Students will be able to understand and develop ability to participate in research work. They will be able to apply suitable algorithm for a route. The students will understand the security requirements for networks enhancing employability of students.
66	Photonics and Optical Communication Networks	ECEN5132	Employability & Skill Development - Students will know about the different modes, devices, detectors, amplifiers using optical fiber communication. They will have knowledge about various types of systems with their strengths and weaknesses. The students will know about different types of optical networks. They will understand the requirements of repeaters and amplifiers and their parameters. The students will be able to choose type of fiber for typical applications. They will be able to integrate the fiber optics with other networks. Such knowledge will help them in getting placed in Communication industry.
67	Statistical Process in Communication	ECEN5133	Employability & Skill Development - Students will know about the different matrices and filters used in communication systems. They will have knowledge about modeling of signals. The students will know about techniques of detection. The students will be able to differentiate between filters. They will learn about signal properties and processes. The students will learn about stochastic models for possible application and hence help in skill development.
68	Satellite Communication and applications	ECEN5141	Employability & Skill Development - Students will know about the orbits and different modules of a satellite. They will have knowledge about satellite links and various factors affecting the QoS of the links. The students will be able to explain the differences between TDMA, FDMA, DAMA etc. access techniques. They will be able to explain VSAT. GPS. The students will be able to analyse causes of interference and solution. They will understand GPS working. Such knowledge leads to enhancement in employability.
69	Multimedia Communication	ECEN5142	Employability & Skill Development - Students will know about the different media classification, media characteristics. They will have knowledge about various types of compression coding and memory systems. The students will know about different architectures used and media modeling. They will learn about management of resources and project management. The students will be able to analyse synchronization problems. They will be producing films with confidence which indicates direct relation to employability
70	Cryptography and Network Security	ECEN5143	Employability & Skill Development - Students will know about the basics and different standards used. They will have knowledge about important cryptography techniques. The students will know about algorithms applied for encryption. They will acquire knowledge about security challenges and some concepts in web security. The students will understand security systems using VPN and Firewalls. They will be able to develop new algorithms. Such skill sets will enhance their employability in all the IT companys.
71	Antenna and Radiating Systems lab	ECEN5151	Employability & Skill Development - Students will know about the different experimental set-ups to measure various parameters related to antennae. They will study radiation pattern for antenna, will acquire practical knowledge about Smith chart and stub matching. The students will also learn to study spectral analysis of signals enhancing their employability.
72	Wireless and Mobile Communication lab	ECEN5152	Employability & Skill Development - The students will be able to correlate different theories of wireless communication and fiber optics with practical experiments. They will understand operations of repeater station, GPS and GSM cellular systems. They will learn the procedures for testing radio parameters. Students will learn working of fiber optic links. Such knowledge will enhance their employability in Communication Industry.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
73	Advanced Digital Communication Techniques	ECEN5201	Employability & Skill Development - Students will learn about the transmission techniques, synchronization in digital communication. They will know about the modulation schemes, OFDM etc. The students will acquire knowledge about the CDMA in details. The students will have clear idea about estimation and detection schemes. They will be able to design reliable channel codings. They will understand the differences between coding schemes. The students will be able to analyse the digital communication quality enhancing their employability in Communication Industry
74	Advanced DSP and applications	ECEN5202	Employability & Skill Development - Students will know about the different transforms applied in signal processing. They will have knowledge about LTI systems, Digital filters. The students will know about multi- rate processing, wavelet transforms. They will solve problems on FFT and DFT. The students will know about the comparison of filters. They will be able to apply the knowledge of wavelets in developing advance systems leading to start up opportunities and entrepreneurship
75	Telecommunication Systems and Engineering	ECEN5231	Employability & Skill Development - Students will know about the different telephone networks, ADSL etc. They will have knowledge about digital telephone systems and local area networks- features and parameters. The students will be aware of ISDN and its operation. They will be able to calculate the efficiency of a tel network. They will know about the various 802.11 standards and their applications. They will know about ATM operation and ATM networks leading to skill development for communication Industry.
76	Image Processing and Pattern Recognition	ECEN5232	Employability & Skill Development - Students will know about the basics of image processing, spatial filtering etc. They will have knowledge about techniques applied for pattern recognition. The students will know about image clustering and face recognition. They will be able to classify and predict. The students will acquire knowledge about identifying objects correctly. They will earn the potential to develop new applications which facilitates entrepreneurship and supports the concept of self reliant nation
77	Cognitive Radios and networks	ECEN5241	Employability & Skill Development - Students will develop an ability to analyze a performance in a radio net. They will develop an ability to learn and apply modular approach in design. They will Develop a passion to pursue next generation wireless communication. They will be able apply correct technique in locating radios in networks. This knowledge will help them in skill development for Communication Industry.
78	Microwave Measurement and Instrumentation	ECEN5242	Employability & Skill Development - Students will be able to analyse instruments like spectrum analyzer, Vector Network analyzer etc. They will be able to measure microwave power. They will acquire an Idea about techniques to measure power. They will develop the capability to analyse problem in measurement procedure. Such skill sets will enhance their employability in Rf Industry
79	Design of Communication Equipments and Systems	ECEN5243	Employability & Skill Development - Students will be able to apply knowledge in designing electronics for communication engineering. They will have the ability to learn and apply modelling based approach through the extensive use of simulation tools. They will be able to.Design of complex PCBs with Clear perception about testing of parameters. Consequently, they will be able to have their own start up supporting national vision of self reliant India.
80	Advanced DSP and applications lab	ECEN5252	Employability & Skill Development - The students will acquire understanding of sampling, convolution , Z-transform, DFT and FFT and their applications. They will be able to design Filters – IIR and FIR which in turn helps in developing skills for Communication Industry
81	Design and Simulation lab	ECEN5253	Employability & Skill Development - Students will be able to Design graphical user interfaced models of various communication systems/ subsystems with the help of suitable advanced software e.g. MATLAB/ OCTAVE/LABVIEW/ NS/ PUFF/ IE3D/ ANSOFT/ HFSS/ CST/ QUALNET/ MICROWAVE OFFICE etc. for detailed study of their operating principle and their performance vis-a-vis practical limitations like, channel bandwidth, noise, attenuation etc. Hence enhances their employability
82	Basic Electrical Engineering	ELEC1001	skill development in basic concept of DC and AC electric circuits Operate DC Machines and analyze Starters and speed control of DC motors. Analyze single and three phase AC circuits. Know the operation of single phase transformers and three phase induction motors.
83	Basic Electrical Engineering Lab	ELEC1051	Employability & Skill Development - Make electrical connections by wires of appropriate ratings. Understand the application of common electrical measuring instruments and the basic characteristics of different electrical machines. A student while working in any shop floor will face several electrical circuit/machines (both AC and DC). Hands on training or a preliminary idea about the working principle and the charateristics of such circuits/ machines will lead to an incresed productivity in the shop floor.
84	Communication forProfessionals	HMTS1011	Employability & Skill Development - It helps the students to write formal letters for business purposes as well as reports effectively in English, which is very much required in all possible multi-cultural, globalized work enviroments that they might face.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
85	Professional Communication Lab	HMTS1061	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Helps in Interpersonal communication. Communicate in an official and formal environment. Effectively communicate in a group and engage in relevant discussion. Engage in research and prepare presentations on selected topics. Understand the dynamics of multicultural circumstances at workplace and act accordingly. Organize content in an attempt to prepare official documents. Appreciate the use of language to create beautiful expressions.
86	Business English	HMTS1202	Employability & Skill Development - It helps the students to communicate effectively in english that helps in all possible job interviews they face. Helps in Interpersonal communication. Organizational Communication: Agenda & minutes of a meeting, notice, memo, circular, Project Proposal, Technical Report Writing, Organizing e-mail messages, E-mail etiquette, Tips for e-mail effectiveness and Levels or Channels of Communication.
87	Language Lab	HMTS1252	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Helps in Interpersonal communication. Learn Voice Modulation, Accent training. Conversational Skills/Spoken Skills Writing with a purpose---Convincing skill, argumentative skill/negotiating Skill (These skills will be repeated in oral skills). Writing reports/essays/articles logical organization of thoughts.
88	Constitution of India	INCO5117	Employability & Skill Development - Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective. To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.
89	Mathematics-I	MATH1101	Employability & Skill Development - The concepts Linear algebra that is given helps in all jobs that uses Machine Learning. Apart from that, the knowledge of Calculus helps all students who choose their career in the domain of Image Processing.
90	Mathematics II	MATH1201	Employability & Skill Development - The basics of Graph Theory that is introduced here is a must for all the engineers that get employed in any of the knowledge-based industries. Also a whole lot of students go for companies working in map-based algorithms like Mapline, Uber, OLA etc. for whom this is a must course. The basic probability and numerical methods are an introductory course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
91	Advanced Discrete Mathematics and Statistical Methods	MATH5101	Employability & Skill Development - This advanced topic deals with Number Theory, which introduces to the students what they ultimately need in a group/company working in Cryptography or Data Security. Also the other things that are taught like Logic, graph theory, probability statistics are very much essential for anybody working in the industry, whatever be the domain.
92	System Administration Using Linux	MCAP3150	Employability to work as system administrator in Linux environment.
93	Advanced Java	MCAP3151	Employability in the field of Advanced Java programming.
94	Image Processing	MCAP3152	Skill development by understanding the basic theory and algorithms and mathematical transforms necessary for image processing.
95	Advanced Java Lab	MCAP3156	Employability in the field of java programming and web development.
96	Image Processing Lab	MCAP3157	Skill development to conduct image enhancement techniques, image restoration procedures, image compression procedures.
97	Cryptography And Network Security	MCAP3160	Employability to design security applications in the field of Information technology.
98	Mobile Computing	MCAP3170	Skill development by understanding and analyzing the difference between Mobile Computing and Wireless Networking.
99	Soft Computing	MCAP3171	Skill development by understanding and analyzing soft computing concepts, technologies and their role in problem solving.
100	Compiler Design	MCAP3182	Skill development to understand the overall hierarchy of formal instructions from source code to machine code.
101	Ecommerce And Erp	MCAP3183	Entrepreneurship with understanding the Hardware and Software Technologies for E-commerce and payment systems.
102	Minor Project And Seminar	MCAP3195	Skill development through minor project and seminar.
103	Comprehensive Viva	MCAP3221	Skill development for comprehensive knowledge on Computer Applications.
104	Major Project And Seminar	MCAP3295	Skill development through major project and seminar.
105	WORKSHOP /MANUFACTURING PRACTICES	MECH1051	Employability & Skill Development - Hands on training on machining exposure (Lathe, shapping, milling, drilling etc) and manufacturing procedures (Casting, welding etc.) are helpful for direct bearing on employability.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
106	Engineering Graphics & Design	MECH1052	Employability & Skill Development - Engineering drawing is the essential language to the engineers and this course help the students to develop themselves as an designer which is very much essential for employability. Engineering Graphics enhances the employability in design/ construction/ interior designing field. Acquaintance with different drafting equipment & accessories; Gain the concept of scale of drawing. The concept and skill of different types of projections of engineering drawing is practiced. Learn engineering drawing software (CAD)
107	Personality Development through Life Enlightenment Skills	PDL5118	Employability & Skill Development - Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life. The person who has studied Geeta will lead the nation and mankind to peace and prosperity. Study of Neetishatakam will help in developing versatile personality of students.
108	Physics I	PHYS1001	Employability & Skill Development - Explain the working principle of LASER, and apply the knowledge in different lasing system and their engineering applications in holography. Imparting the essence and developing the knowledge of controlling distant object like satellite, data transfer through optical fiber, implication of laser technology, handling materials in terms of their electrical and magnetic properties etc.
109	Physics Lab I	PHYS1051	Employability & Skill Development - To gain practical knowledge by applying the experimental methods to correlate with the Physics theory. To learn the usage of electrical and optical systems for various measurements. Apply the analytical techniques and graphical analysis to the experimental data. Understand measurement technology, usage of new instruments and real time applications in engineering studies. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group.
110	Sanskrit for Technical Knowledge	SANS5120	Employability & Skill Development - Learning of Sanskrit to improve brain functioning. Learning of Sanskrit to develop the logic in mathematics, science & other subjects. Enhancing the memory power. The engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature.
111	Digital VLSI IC Design	VLSI5101	Employability & Skill Development - Students will learn CMOS Circuit Design, Layout Design, VLSI Design Methodology, HDL Coding, EDA Logic Synthesis and P & R flow which will enable their employability and skill development
112	Embedded Systems Design	VLSI5102	Employability & Skill Development - Students will learn Embedded System Design Methodology, Micro controller Design, Embedded Memory Architecture and I/O Configuration which will enhance their employability and skill development
113	DSP For VLSI System	VLSI5131	Employability & Skill Development - Students will learn DSP Algorithm, Signal and Data Flow Graph, Pipeline and Parallel Processing, SISO, MIMO System which will enable their employability and Skill Development
114	VLSI IC Fabrication	VLSI5132	Employability & Skill Development - Students will learn various fabrication steps and methods of basic and advanced Technology which will enhance their Skill development
115	CAD of Digital System	VLSI5141	Employability & Skill Development - Students will learn graph theory, data structures and algorithm needed for CAD automations, they will learn Physical Design Optimization on Partitioning and Floorplan, High level and Logic Level Synthesis and Verilog Modeling which will enhance their employability and skill development
116	Modelling of VLSI Device	VLSI5142	Employability & Skill Development - Students will learn BJT, MOSFET Modeling, Short Channel Effect, MOS Scaling and Industry Standard Compact Modeling which will enhance their employability and skill development
117	Digital VLSI IC Design Lab	VLSI5151	Employability & Skill Development - Students will do hands on practice on Industry Standard Cadence Virtuoso Schematic editor, Spectra Circuit Simulation, Layout Edit and Verifications, Pre Layout and Post Layout Simulation and Analysis which will enable their employability and skill development
118	Embedded Systems Design Lab	VLSI5152	Employability & Skill Development - Students will do hands on practice on Industry Standard Xilinx Vivado Simulator, VHDL coding and Simulation/Verification, Finite State Machine coding using HDL, Test Bench HDL coding for RTL Verification, FPGA synthesis, Place & Route and Hardware Programming, ARM Cortex based Software/Hardware which will enable their employability and skill development
119	Analog VLSI IC Design	VLSI5201	Employability & Skill Development - Students will learn MOS-based analog VLSI sub-circuits, relevant small-signal equivalent circuit models, they will learn basic concepts in RF design and the geometry, models of passive devices used in the RFIC, they will learn data converters, switched-capacitor circuits, operation of the oscillator circuits. All these learnings will enhance their employability and skill development
120	VLSI Design, Testing and Verification	VLSI5202	Employability & Skill Development - Students will learn embedded Memory Design in VLSI Chip, VLSI Interconnect Design, Industry Standard STA (Static Timing Analysis) Method, Set-up and hold Checks for Timing Verification, process variation and Clock skew concepts and Si Testing/Debug Methods which will enable their employability and skill development



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
121	Memory Technologies	VLSI5231	Employability & Skill Development - Students will learn SRAM Bit-cell Design, SRAM Array architecture and periphery Circuits, DRAM Bit cell Design, DRAM Array architecture, periphery Circuits and Controller, various ROM Design and Future Memory Technologies like MRAM, FRAM which will enable their employability and skill development
122	Low Power VLSI Design	VLSI5232	Employability & Skill Development - Students will learn CMOS Dynamic Power Dissipation & Reduction Techniques, CMOS Standby (leakage) Power Dissipation & Reduction Techniques, Short Circuit Power Reduction Techniques, Embedded Memory Power Reduction Techniques, System and Architecture level Power Reduction Techniques which will enable their employability and skill development
123	Advanced VLSI Processor	VLSI5241	Employability & Skill Development - Students will learn instruction set architecture (ISA), CISC and RISC Architecture, DSP Processor Architecture, Accelerator, Multi-Threaded Processor, Processor cores in SOC Design which will enhance their employability and skill development
124	Advanced Nano Devices	VLSI5242	Employability & Skill Development - Students will learn various leakage phenomena in advanced MOS, High K Plus Metal Gate Technology, SOI MOS device, FinFET Devices like DGMOS, Tri-gate, Hetero-Structures, CNT, Graphene Device which will enhance their employability and skill development.
125	Analog VLSI IC Design Lab	VLSI5251	Employability & Skill Development - Students will do hands on practice on Analog VLSI sub-circuits and amplifier circuits, layout for analog VLSI sub-circuits and circuits, special circuits namely data converters, practical switched-capacitor circuits which will enhance their employability and skill development
126	VLSI Design, Testing and Verification Lab	VLSI5252	Employability & Skill Development - Students will do hands on practice on Critical Path Modeling and Analysis, Sizing in Digital Design, CMOS Design of Combinational Circuits and Modules, CMOS Design of Sequential Circuit, Setup and Hold Check, Layout of a system, DRC, LVS, Extraction using Industry Standard Cadence Virtuoso/Assura, Back-annotation and Post Layout Timing Analysis using Industry standard Spectra Circuit Simulator which will enhance their employability and skill development.
127	Stress Management by Yoga	YOGA5119	Employability & Skill Development - Develop healthy mind in a healthy body thus improving social health. Improve efficiency.
128	Analog Electronics	AEIE2101	Employability & Skill Development - Design and analyze BJT amplifiers for small and large signal. Design and compare between different types of Oscillators to meet the specified needs with appropriate consideration. Design, analyze and understand the application of different types of multivibrators with and without IC 555. Analyze and design analog electronic circuits using discrete components with specified needs for the betterment of human living.
129	Circuit Theory and Networks	AEIE2102	Employability & Skill Development - Identify, formulate, and solve engineering problems in the area circuits and systems. Acquire skills in analyzing electrical measuring devices, analog electronic circuits, power electronic circuits. Analyze and synthesize RL, RC and RLC networks. Design an electric system, components or process to meet desired needs within realistic constraints.
130	Analog Electronics Lab	AEIE2111	Employability & Skill Development - Set up testing strategies and select proper instruments. Design different kind of electronic circuits appropriately to obtain the best possible circuits that can be applied to any electronic systems. Practice different types of wiring and instruments connections keeping in mind technical, economical, safety issues. Evaluate the use of computer based analysis tools to review the performance of electronic circuit.
131	Circuits and Networks Lab	AEIE2112	Employability & Skill Development - Apply network theorems to analyze the experimental result using hardware circuits. Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
132	Digital Electronic Circuits	AEIE2201	Employability & Skill Development - Design and implement combinational logic circuits, sequential logic circuits. Describe the nomenclature and technology in the area of memory devices: ROM, RAM, PROM, PLD etc. and different kind of ADCs and DACs. Understand the basic electronics of logic circuits and be able to use integrated circuit packages.
133	Sensors and Transducers	AEIE2202	Employability & Skill Development - Measure various industrial variables such as temperature, pressure, level, flow etc. Understand the operational conditions, range and limitations of sensors and transducers. Understand the interfacing of the sensors with the electrical circuits in measuring and controlling devices. Use the sensors in IoT based applications.
134	Electrical Measurement and Instruments	AEIE2203	Employability & Skill Development - Measurement of resistance, inductance and capacitance. Localization of cable faults and calibration of instruments. Measurement of energy by single phase induction type meter. Construction and principle of operation of Permanent Magnet Moving coil, Moving iron, Dynamometer and Electrostatic type instruments.
135	Digital Electronic Circuits Lab	AEIE2211	Employability & Skill Development - Analyze and identify different components of digital electronic circuits. Design and implement combinational logic circuits, and sequential logic circuits. Develop necessary digital logic and apply it to solve real life problems keeping in mind technical, economical, safety issues.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
136	Electrical Measurement Lab	AEIE2212	Employability & Skill Development - Measure energy using Single Phase A.C. energy meter and evaluate the unknown frequency of an A.C. supply using Wien Bridge. Determine the power using Instrument Transformer and apply the knowledge about the instruments to use them more effectively
137	Dissertation Part-I	AEIE6121	Employability & Skill Development - Dissertation should be on any topic having relevance with Instrumentation, Electrical or inter-disciplinary field of engineering. Dissertation should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
138	Micro-Electromechanical System design	AEIE6131	Employability & Skill Development - Design MEMS-based diaphragm type devices analytically. Fabricate the whole MEMS system with the help of simulation software. Develop micro-fluidic system for biomedical applications. Develop skill on engineering mechanics for micro-system design.
139	VLSI Technology	AEIE6132	Employability & Skill Development - Develop models of moderately sized CMOS circuits that realize specified digital functions. Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects. Learn VLSI design methodologies - the various steps and tools, the implementation choices, and good architecture practices.
140	Robotics Engineering	AEIE6133	Employability & Skill Development - Solve basic robotic dynamics, path planning and control problems. Model robot links and joints and integrate sensor technology and other external devices into the robot system to design multilink flexible robot.
141	Applied Soft Computing	AEIE6141	Employability & Skill Development - Design and analyze the different components of fuzzy controller appropriately to obtain the best possible fuzzy controller that can be applied to any process control systems. Acquire knowledge of different ANN terminologies to apply in solving simple ANN problems. Illustrate biological background and give idea about basics of stochastic algorithm.
142	Wireless Sensor Networks	AEIE6142	Employability & Skill Development - Acquire knowledge of MAC protocols developed for WSN. Carry out simple analysis and planning of WSN. Apply routing protocols on the developed WSN. Work on some WSN standards, platforms and tools.
143	Remote Sensing	AEIE6143	Employability & Skill Development - Develop skills to address an environmental monitoring problem by selecting an appropriate remotely sensed data set and applying the relevant image analysis and interpretation techniques. Perform basic remote sensing image interpretation including spectral ratios, histogram stretching, filtering, supervised and unsupervised classification algorithms.
144	Medical Instrumentation	AEIE6151	Employability & Skill Development - Understand the physiology of biomedical systems and different methods in the design of biomedical instruments. Learn the different methods of medical imaging systems, concepts related to the operations and analysis of biomedical instruments. Apply it in the design of different assisting therapeutic and diagnostic medical devices.
145	Advanced Digital Control	AEIE6152	Employability & Skill Development - Principles for design of Digital Control system and will gain knowledge of implementing for industrial applications. Developing algorithms for applications based various digital controllers and analysis of discrete control systems using various time and frequency domain tools. Aware of advanced understanding of adaptive and self tuning principles and applications.
146	Nonlinear Control	AEIE6153	Employability & Skill Development - Feedback control, Control problems, Stabilization via linearization, Integral control, Integral control via linearization, Gain scheduling, Feedback linearization, Input-output linearization, Full-state linearization, State feedback control, Stabilization.
147	Post-Submission Defense of Dissertation	AEIE6221	Employability & Skill Development - Represent and communicate a project work very efficiently to the audience. Interpret experimental data and note down observations competently. Respond to all types of questions from audience based on their presentation topic.
148	Dissertation (Completion)	AEIE6222	Employability & Skill Development - Manifest themselves in industrial and research ambiances by growing skills and confidence. Solve, analyze and execute technical projects in specified time frame. Develop ethical and social responsibilities by fulfilling the needs of society for betterment of life and engage themselves in life-long learning. Develop confidence for self-learning attitude for lifelong learning.
149	Comprehensive Viva-Voce	AEIE6223	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning.
150	Chemistry of Biomolecules	BIOT2101	skill development in spectroscopy, structural chemistry
151	Industrial Stoichiometry	BIOT2102	skill development in material and energy balance
152	Biochemistry	BIOT2103	skill development in analysis of biochemical pathways
153	Microbiology	BIOT2104	skill development in study of microbial life cycle and pathways
154	Thermodynamics & Kinetics	BIOT2201	skill development in kinetic mechanism of enzyme-substrate reactions
155	Transfer Operation-I	BIOT2202	skill development in transfer operations techniques
156	Molecular Biology	BIOT2203	skill development in molecular biology techniques and procedures
157	Industrial Microbiology & Enzyme Technology	BIOT2204	skill development in study of industrial enzymes and their industrial applications

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
158	Basic Environmental Engineering & Ecology	CHEM2001	Employability & Skill Development - It starts with basic concepts of ecology and concerns on environment. This subject discusses how the spiraling rate of population growth and the requirements of human beings have led to large-scale deforestation, depletion of the ozone layer, creation of greenhouse effect, acid rain, smog and environmental pollution. The Paper equips students to manage environment-related issues by showing how technology can be used to control these problems. Standards and control measures: Industrial, commercial and residential air quality standard, control measure (ESP, cyclone separator, bag house, catalytic converter, scrubber (ventury). Waste water treatment system, Noise pollution control. Energy audit, Green building, Green sources of energy, Concept of Green Chemistry, Green catalyst, Green solvents (replacement of VOC)
159	Mechanical Operation	CHEN2101	Employability & Skill Development - Students will be able to apply the concepts of screen analysis to select suitable screening equipment and method for a given screening operation. Students will be able to select appropriate size-reduction equipment for a given comminution operation and will be able to calculate the power requirements for the operation.
160	Energy Engineering	CHEN2103	Employability & Skill Development - Student can learn to characterize Solid, liquid and gaseous fuel. Acquire knowledge of different crude oil extraction process. Acquire knowledge on the processing of crude oil along with an estimation of various value-added products.
161	Industrial Stoichiometry	CHEN2104	Employability & Skill Development - The students will learn to apply knowledge base to identify dimensionless numbers given several correlated variables. They can acquire ability to handle elementary flow-sheeting given a specific process. they can also develop skills to identify recycle, bypass and purge points in a chemical process and perform calculations with them.
162	Energy lab	CHEN2111	Employability & Skill Development - The students will be able to understand the importance of quality control of the properties of different fuels during manufacturing and in applications and execution of the activities for implementing concept of Quality in the Refineries and fuel dealers' premises or R&D projects including the commercial operations in any business or industry operations of diverse nature.
163	Fluid Mechanics Lab	CHEN2112	Employability & Skill Development - The objective of this course is to impart working knowledge and develop skills of the students in fluid mechanics through bridging between the theoretical concepts and working practices for attaining the competency in practical applications or for working in the industry and conducting research & development activities.
164	Mechanical Operation Lab	CHEN2113	Employability & Skill Development - The objective of this course is to provide a hands-on idea on the mechanical devices that are essential in handling the material and it's processing in different chemical engineering related downstream applications.
165	Chemical Engineering Drawing Laboratory	CHEN2114	Employability & Skill Development - The objective of the course is to provide an elaborated concept of engineering drawing and idea on the relevant software for engineering drawing. Student can learn to use AutoCAD software for developing engineering drawing layouts and can prepare a virtual 3-D representation of an engineering equipment.
166	Process Heat Transfer	CHEN2201	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes.
167	Chemical Engineering Thermodynamics	CHEN2203	Employability & Skill Development - student can understand the process involving liquefaction, refrigeration and different power cycles. They can calculate thermodynamic efficiency of a process. They can also estimate thermodynamic properties of substances in gas or liquid state of ideal and real solution.
168	Heat Transfer lab	CHEN2211	Employability & Skill Development - The objective of this course is to provide the practical exposure to the students regarding the application of various heat transfer phenomenon and correlations in various engineering processes. Hands on experience will enable them to analyze working principles of various heat transfer devices including heat exchangers, condensers.
169	Surveying	CIVL2101	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
170	Strength of Materials	CIVL2102	Employability: Learn the fundamental tools and concepts involving mechanics to analyse and design structures. Forms the basic foundation in order to successfully learn the advanced structural engineering subjects.
171	Building Materials and Construction	CIVL2103	Employability: To assess the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates.
172	Engineering Geology	CIVL2104	Employability: To study and identify different types of rock and mineral on the basis of their physical and mechanical properties.
173	Strength of Materials Lab	CIVL2111	Employability: Apply the concepts derived from various experiments conducted to determine the various properties of metals at industrial site.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
174	Engineering Geology Lab	CIVL2112	Employability: To understand the role of geology in the design and construction process of underground openings in rock. To apply geologic concepts and approaches on rock engineering projects. To identify and classify rock using basic geologic classification systems.
175	Building Planning and Drawing	CIVL2121	Employability: To study various aspects of engineering drawing like plan, elevation, section and apply them in them in the respective field work
176	CAD Lab	CIVL2122	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
177	Analysis of Structures I	CIVL2201	Employability: To assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
178	Soil Mechanics I	CIVL2202	Employability: To study the physical and mechanical properties of soil and to apply the knowledge for the solution of practical engineering problems.
179	Concrete Technology	CIVL2203	Employability: To learn various types and properties of cement, concrete and it's widespread application.
180	Fluid Mechanics	CIVL2204	Employability: To learn fundamental concepts of fluid mechanics and apply the, in irrigation and water resource engineering
181	Fluid Mechanics Lab	CIVL2211	Employability: Understand the behaviour of fluid in various conditions using various experimental setups.
182	Surveying Practice	CIVL2212	Employability: The objective of surveying laboratory is to make student familiar and competent enough to draw map in suitable scale by using different surveying instruments like total station, theodolite, auto level, global positioning system (GPS), geographical information system (GIS), electromagnetic distance measurement (EDM).
183	Quantity Survey, Specification and Valuation	CIVL2221	Employability: Estimate the complete cost involved in the total planning, execution and construction of any project work. Extremely useful subject in respect to practical civil engineering is concerned.
184	Seminar I	CIVL2222	Entrepreneurship To express and present some technical matter in a lucid manner in front of the listeners who are technically sound and as well as not sound.
185	Data Structure and Basic Algorithms	CSEN2001	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real life problem which helps in employability. Learn about the data structures/ methods/ algorithms mentioned in the course with a comparative perspective so as to make use of the most appropriate data structure/method/algorithm in a program to enhance the efficiency (i.e. reduce the running time) or for better memory utilization, based on the priority of the implementation.
186	Data Structure and Basic Algorithms Lab	CSEN2011	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real time problem which helps in employability. Implementation of array operations. linked lists, stacks & queues using linked lists. Application of sorting and searching algorithms, Polynomial addition, Polynomial multiplication, Sparse Matrices, . Recursive and Nonrecursive traversal of Trees, Threaded binary tree traversal, DFS and BFS.
187	Data Structures & Algorithms	CSEN2101	Employability & Skill Development - Teaches the basics of Data Structure and also a few concepts of algorithms. For all the new-age companies that need a programmer to code new algorithms for them, this is a must course.
188	Discrete Mathematics	CSEN2102	Employability & Skill Development - The portion that deals with Number Theory introduces to the students for the first time what they ultimately use in a group/company working Cryptography or Data Security. Also the other things that are taught like Logic is essential for anybody working in the industry, whatever be the domain.
189	Object Oriented Programming	CSEN2103	Employability & Skill Development - It teaches a student the basics of OOP and to some extent gives the concept of OOD. It introduces both C++ and Java that is basically the main tool to make student survive in the market.
190	Data Structures & Algorithms Lab	CSEN2111	Employability & Skill Development - This reinforces the knowledge of the Data Structure with an hands-on experience to boost the confidence of the students.
191	Software Tools	CSEN2112	Employability & Skill Development - This is a course that can be rarely found in a typical CSE curriculum. It teaches the things that we typically use in the organizations that do serious software development like Makefile, purify, purecov, codecov etc. That how to write correct code and optimize the same. This course single-handedly differentiates our graduates from the computing departments of other schools.
192	Object Oriented Programming Lab	CSEN2113	Employability & Skill Development - It gives the hands-on training to code in OOPs, without which it is difficult to get a programming job anywhere in the world.
193	Design & Analysis of Algorithms	CSEN2201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
194	Computer Organization	CSEN2203	Employability & Skill Development - This gives the basic idea how a computer works and also. Not only it is a requirement for those who work in hardware but also the Software Engineers need it as it teaches the principles based on which a computer can be used efficiently.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
195	Data Structure and Database Concept	CSEN2206	Employability & Skill Development - Students can demonstrate an understanding of normalization theory and apply it to the normalization of a database. They will understand the concept of transactions and concurrency in database management and formulate solutions to a broad range of query problems using relational algebra and SQL.
196	Algorithm Implementation Lab	CSEN2211	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
197	DBMS lab	CSEN2216	Employability & Skill Development - Student can apply DML component of Structured query language (SQL) for storing and modification of data in Oracle RDBMS system. they can apply DQL component of Structured query language (SQL) to construct complex queries for efficient retrieval of data from existing database as per the user requirement specifications. It is also possible to conceptualize and apply various P/L SQL concepts like cursor, trigger in creating database programs.
198	Software Engineering	CSEN6101	Employability & Skill Development - Any software engineer working in development project or maintenance project will need this advanced knowledge.
199	Thesis(Progress) and Seminar	CSEN6195	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to their working topic within the specified time, such a requirement arises very often in the industry.
200	Thesis(Final)	CSEN6295	Employability & Skill Development - It helps the students to write a proper technical documentation or manual on their work, which is very much required when they join a company. Most importantly they learn how to do research on a new topic on his own albeit with some guidance from his mentor. Those who go for higher studies get immensely benefitted from such an experience.
201	Thesis Viva-voce	CSEN6296	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present a technical topic logically, such a requirement arises very often in the industry.
202	Digital Electronics	ECEN2002	Employability & Skill Development - Design of Combinational circuits, registers and Counters, different types of A/D and D/A conversion techniques. the concept of Flip flops to analyze different memory systems will develop skill
203	Digital electronics Laboratory	ECEN2012	Employability & Skill Development - Realization of Combinational circuits, Counters, multiplexers will develop skill
204	Analog Circuits	ECEN2101	Employability & Skill Development - Understanding the concepts of electronic ckt operations, designing different types of oscillators and high gain amplifier ckt will enhance employability & develop skills.
205	Data Structure	ECEN2102	Employability & Skill Development - Development of an efficient program based on some algorithm will develop skill.
206	Signals and Systems	ECEN2103	Employability & Skill Development - Understanding how to categorize and identify the different types of signals and systems, analyzing the frequency domain characteristics of signals using mathematical tools, implementing and extending the concepts of transformation tools to design of communication systems and filters will enhance employability & develop skills.
207	Digital Logic	ECEN2104	Employability & Skill Development - Anybody joining the EDA industry or the semiconductor industry at large needs this course as a must.
208	Circuit Theory and Filters	ECEN2105	Employability & Skill Development - Understanding and analysing complex electrical circuits and applying mathematical tool to solve various network behaviour will enhance employability & develop skills.
209	Analog Circuits Laboratory	ECEN2111	Employability & Skill Development - Designing different electronic circuits and measuring circuit parameters will develop skill.
210	Data Structure Laboratory	ECEN2112	Employability & Skill Development - Learning to analyze run-time execution of sorting methods , implementing any ADT using both array based and linked-list based data structures, designing advance data structure using Non-Linear data structure and finding appropriate data structures as applied to specified problem definition will enhance employability & develop skills.
211	Signals and Systems Laboratory	ECEN2113	Employability & Skill Development - Learning signal synthesis using SA ,understanding signal operations and measuring filter responses will develop skill.
212	Digital Logic Lab	ECEN2114	Employability & Skill Development - Hands on experience that helps very much in the Electronic Design Automation (EDA) industry
213	Circuit and Network Theory Laboratory	ECEN2152	Employability & Skill Development - Obtaining the ability to apply MATLAB/OCTAVE for circuit analysis, analyzing two port network and designing different circuits will develop skill.
214	EM Theory & Transmission Lines	ECEN2201	Employability & Skill Development - Understanding of Electromagnetic wave propagation, different electromagnetic phenomena , design of Impedance Matching Networks for two wire Transmission Lines, analysis of the radiation characteristics of antenna configurations will increase the employability & develop skills
215	Analog Communication	ECEN2203	Employability & Skill Development - Knowledge of Modulation, time and frequency domain representations of signal, analysis of various multiplexing techniques and radio receivers will develop skill.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
216	Solid State Devices	ECEN2204	Employability & Skill Development - Understanding of operations of solid state devices using relative position of Fermi energy levels across p-n junctions in devices, concepts of different hetero junctions in semiconductor devices will enhance skill.
217	EM Theory Laboratory	ECEN2211	Employability & Skill Development - study on radiation patterns of various types of antenna, SW pattern under different conditions will increase the employability & develop skills
218	Analog Communication Laboratory	ECEN2213	Employability & Skill Development - Hands on experience in design of modulators & demodulators, measurement of Radio receiver parameters will develop skill.
219	Photonics & Optical Communication	ECEN5201	Employability & Skill Development - Students will know about the different modes, devices, detectors, amplifiers using optical fiber communication. They will have knowledge about various types of systems with their strengths and weaknesses. The students will know about different types of optical networks. They will understand the requirements of repeaters and amplifiers and their parameters. The students will be able to choose type of fiber for typical applications. They will be able to integrate the fiber optics with other networks. Such knowledge will help them in getting placed in Communication industry.
220	Error Control and Coding	ECEN5202	Employability & Skill Development - The students will understand the importance of channel coding in data communication. They will learn about different techniques and will apply the correct one in a situation. They will be able to analyse the efficacy of different methods. This will enhance their employability.
221	Mobile Communication	ECEN5203	Employability & Skill Development - The students will understand the challenges of wireless and mobile communication. They will be able to analyse the factors like fading, SNR. The students should be able to explain the working of a cellular system- both GSM and CDMA. They will be able to analyse performance of cellular and other wireless networks enhancing their employability in communication Industry and allied services
222	Communication systems Laboratory	ECEN5211	Employability & Skill Development - The students will be able to correlate different theories of wireless communication and fiber optics with practical experiments. They will understand operations of repeater station, GPS and GSM cellular systems. They will learn the procedures for testing radio parameters. Students will learn working of fiber optic links. Such knowledge will enhance their employability in Communication Industry.
223	Cryptography & network security	ECEN5231	Employability & Skill Development - Students will know about the basics and different standards used. They will have knowledge about important cryptography techniques. The students will know about algorithms applied for encryption. They will acquire knowledge about security challenges and some concepts in web security. The students will understand security systems using VPN and Firewalls. They will be able to develop new algorithms. Such skill sets will enhance their employability in all the IT companies.
224	Artificial intelligence & soft Computing	ECEN5232	Employability & Skill Development - They will have initial exposure to AI and its power. Processing of images and their application in various fields are taught so that they can apply in the relevant domains. Such skill sets will enhance their employability in all the IT companies.
225	Integrated Circuits & Design	ECEN5233	Employability & Skill Development - The designing of chips is a hot topic. The students will learn and understand the devices, their characteristics. Then they will apply the knowledge to design ICs with different features. Such skill sets will enhance their employability in Rf Industry
226	Microwave measurement and Instrumentation	ECEN5234	Employability & Skill Development - Students will be able to analyse instruments like spectrum analyzer, Vector Network analyzer etc. They will be able to measure microwave power. They will acquire an Idea about techniques to measure power. They will develop the capability to analyse problem in measurement procedure. Such skill sets will enhance their employability in Rf Industry
227	Satellite communication	ECEN5241	Employability & Skill Development - Students will know about the orbits and different modules of a satellite. They will have knowledge about satellite links and various factors affecting the QOS of the links. The students will be able to explain the differences between TDMA, FDMA, DAMA etc. access techniques. They will be able to explain VSAT. GPS. The students will be able to analyse causes of interference and solution. They will understand GPS working. Such knowledge leads to enhancement in employability.
228	Image processing & pattern Recognition	ECEN5242	Employability & Skill Development - Students will know about the basics of image processing, spatial filtering etc. They will have knowledge about techniques applied for pattern recognition. The students will know about image clustering and face recognition. They will be able to classify and predict. The students will acquire knowledge about identifying objects correctly. They will earn the potential to develop new applications which facilitates entrepreneurship and supports the concept of self reliant nation
229	Multimedia communication	ECEN5243	Employability & Skill Development - Students will know about the different media classification, media characteristics. They will have knowledge about various types of compression coding and memory systems. The students will know about different architectures used and media modeling. They will learn about management of resources and project management. The students will be able to analyse synchronization problems. They will be producing films with confidence which indicates direct relation to employability

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
230	Advanced Antenna Engineering	ECEN5244	Employability & Skill Development - Students will come to know about Antenna – Radiation, VSWR, aperture and their importance, Types of antennae and antenna arrays including microstrip antenna, Testing principles of antennae, EMI and EMC and associated hazards, Different propagation phenomena and QoS of radio links and their analysis which in turn will enhance their Employability.
231	EMI/EMC	ECEN6131	Employability & Skill Development - Students will be able to Identify sources of EMI and understand coupling of electromagnetic signals leading to interference. They will be able to develop an ability to design EMI mitigation techniques. Students will be able to demonstrate EMI test method and its capabilities. Further they will be able to identify EMC requirements for electronic systems and understand EMC standards and its application. As such their chances of employability will increase.
232	Ad-hoc and Sensor Networking	ECEN6132	Employability & Skill Development - Students will be able to analyze a situation and interpret a data in ad hoc networks. Students will acquire knowledge to learn and apply modeling based approach through the extensive use of simulator tools. Students will be able to understand and develop ability to participate in research work. They will be able to apply suitable algorithm for a route. The students will understand the security requirements for networks enhancing employability of students.
233	Cognitive Radio Technology	ECEN6141	Employability & Skill Development - Students will develop an ability to analyze a performance in a radio net. They will develop an ability to learn and apply modular approach in design. They will Develop a passion to pursue next generation wireless communication. They will be able apply correct technique in locating radios in networks. This knowledge will help them in skill development for Communication Industry.
234	Design of Communication equipments and Systems	ECEN6142	Employability & Skill Development - Students will be able to apply knowledge in designing electronics for communication engineering. They will have the ability to learn and apply modelling based approach through the extensive use of simulation tools. They will be able to.Design of complex PCBs with Clear perception about testing of parameters. Consequently, they will be able to have their own start up supporting national vision of self reliant India.
235	Analog & Digital Electronic circuits	ELEC2101	Skill development / Entrepreneurship- Design and analyze Electronic circuits to meet the specified needs with appropriate consideration. Design and analyze various sequential circuits like synchronous and asynchronous counters, shift registers using flip flops. Entrepreneurship for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools
236	Circuit Theory	ELEC2102	Skill development in electrical technology by Imparting basic knowledge of electrical quantities such as current, voltage, power, energy and frequency to understand the impact of technology in a global and societal context. Identify, formulate, and solve engineering problems in the area circuits and systems, solve electrical circuits having both dependent and independent sources, analyze magnetically coupled circuits, use Laplace transform technique in solving electrical circuits. Design, analyze and synthesize filters.
237	Field Theory	ELEC2103	Skill development in electric field calculation, magnetic field calculation and propagation of electromagnetic wave through different medium
238	Analog & Digital Electronic circuit Lab	ELEC2111	Skill development for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools.
239	Circuit Theory Lab	ELEC2112	Skill development in electrical engineering by acquainting the basic concepts and properties of electrical circuits.Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
240	Electric Machine-I	ELEC2201	Skill development on- Study of various operations of DC machines and Transformers
241	Electrical & Electronic Measurement	ELEC2202	Skill development in the field of measuring instruments (PMMC, MI & ED). Choose appropriate bridge for measurement of resistance, capacitance and inductance. acquire knowledge about various electronic and digital instruments like average reading AC voltmeters, peak reading AC voltmeters, true RMS voltmeter, electronic multi-meter, digital voltmeters.
242	Thermal Power Engineering	ELEC2203	Skill development in thermal power engineering. Acquiring knowledge about basic Concepts of thermodynamics, understanding the application of first and second law of thermodynamics, understanding the basics of thermal power generation and calculate the efficiencies of Rankine cycles with reheat and regeneration, acquiring knowledge of various types of boilers, turbines used in thermal power plants provides employability.
243	Electrical Machine-I Lab.	ELEC2211	Employability/Entrepreneurship on various testing of DC machines and Transformer
244	Electrical & Electronic Measurement Lab.	ELEC2212	Skill development for measuring electrical parameters in efficient ways.
245	Thermal power Engineering Lab	ELEC2213	Employability & Skill Development - Thermal power engineering knowledge provides Employability

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
246	Human Values & Professional Ethics	HMTS2001	Employability & Skill Development - It helps a student to perform in an ethical matter which is obligatory for holding a position in the industry in the long run. Learn to apply ethical theories in the decision making process and follow the ethical code of conduct as formulated by institutions and organizations. Develop strategies to implement the principles of sustainable model of development.
247	Indian Culture and Heritage	HMTS2002	Employability & Skill Development - Learn about Ancient Indian Science & Technology with subtopics of Mathematics, Astronomy, Medicine and Architecture Technology. This course enables students to factor in human values and professional ethics in all of their activities in professional life. Students also apply their knowledge about <u>variation of Indian culture &amp; heritage</u> .
248	Language Practice Lab (Level 2)	HMTS2011	Employability & Skill Development - It helps in all jobs as it enhance the language skills to communicate effectively. Develop different skills like Formal verbal communication, Presentation skills, <u>Group Discussion, Job Application and Personal Interview</u> .
249	Research Methodology and Project Management	HMTS6101	Employability & Skill Development - Students will be able to Understand research problem formulation. They will be able to analyze research related information, understand the ultimate importance of ideas, concept and creativity. they will also understand Importance of IPR for individuals and nations. Such knowledge definitely enhances skill development for research which is in alignment with <u>Make in India concept</u> .
250	Digital Electronics	INFO2101	Employability & Skill Development - Analyse and design of digital circuits to use them in <u>IOT applications which helps in employability</u> .
251	Computer Organization	INFO2102	Employability & Skill Development - Gain knowledge in internal working, structure and implementation of a computer system.
252	Digital Electronics & Computer Organization Laboratory	INFO2112	Employability & Skill Development - Aquired skill to simulate,synthesis and testing of digital circuits which helps in employability.
253	Switching Theory & Automata	INFO2201	Employability & Skill Development - Gain Knowledge in checking syntax,testing automation and natural language processing which helps in Employability.
254	Design & Analysis of Algorithms	INFO2202	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which create employability.
255	Information Theory & Coding	INFO2203	Employability & Skill Development - Attain the knowledge of information theory and direct applications of it over various real life problem.
256	Object Oriented Programming	INFO2204	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
257	Design & Analysis of Algorithms Laboratory	INFO2212	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which helps in employability.
258	Object Oriented Programming Laboratory	INFO2214	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
259	Mathematical Methods	MATH2001	Employability for improvement of mathematical skills. Develop computational Synthesize components of a physical phenomenon and consequently construct a mathematical model of the system. Apply suitable analytic methods to solve wave equations, heat conduction equation.rstanding of second order differential equations with analytic coefficients along with Bessel and Legendre differential equations with their corresponding recurrence relations. Master how partial differentials equations can serve as models for physical processes such as vibrations, heat transfer etc.
260	Numerical and Statistical Methods	MATH2002	Employability & Skill Development - Analyzing certain algorithms, numerical techniques and iterative methods that are used for solving system of linear equations, implementing appropriate numerical methods for solving advanced engineering problems , applying the knowledge of matrices for reducing problems involving Science and Engineering, developing an understanding to reduce a matrix to its constituent parts in order to make certain subsequent calculations simpler and applying various optimization methods for solving realistic engineering problems will enhance skill.
261	Numerical and Statistical Methods Lab	MATH2012	Employability & Skill Development - Solve problems based on Numerical Methods. Develop algorithms to handle large systems of equations appearing in physical and engineering problems. knowledge of C programming to find non-iterative exact solutions of a system of equations, ability of C programming to solve problems involving interpolation, implementation of algorithms in optimization problems will enhance skill
262	Probability & Numerical Methods	MATH2202	Employability & Skill Development - This is a must course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
263	Numerical Methods & Programming Lab	MATH2212	Employability & Skill Development - It gives a chance to the students to implement the numerical techniques that they learn in the corresponding theory paper. It helps them with any job that requires the skill of precision programming in Scientific Computing like the ones used in space science or missile technologies.
264	Applied Thermodynamics	MECH2101	Employability & Skill Development - This is a conceptual subject and the knowledge on this can be applied in various industrial as well as research field. <u>Students directly apply the knowledge in different thermal equipment</u> .



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
265	Strength of Materials	MECH2102	Employability & Skill Development - Fundamentals of Mechanics of Materials by studying the deformed behavior of structures (bar, beam, column) under various loading (axial, torsional, bending or combination of them) and boundary (statically determinate & indeterminate) conditions are introduced in this subject. Students will be able to apply the knowledge to analyse, select suitable material and calculate & predict stresses and deformations to a problem at hand and be a part of RnD team of a research institute or company.
266	Fluid Mechanics	MECH2103	Employability & Skill Development - The fundamentals of Fluid Mechanics including Fluid Statics and Fluid Dynamics are introduced through this subject. Students will be able to apply various fundamental relationships of Fluid Mechanics to analyse various system such as piping network having losses, pipe bends etc.
267	Engineering Materials	MECH2104	Employability & Skill Development - Detail knowledge of engineering materials and smart newly developed materials with their properties and application can be gathered and that can be applied in mining and manufacturing industry.
268	Metrology & Measurement	MECH2105	Employability & Skill Development - Students learn various techniques of measurement of dimensions, tolerances, surface finish, temperature, pressure, strain, stress etc and the instruments associated with such measurements. This is a vital skill in any manufacturing industry.
269	Machine Drawing – I	MECH2111	Employability & Skill Development - Basic concepts of Sketching, Editing, Modifying & Drafting tools of AutoCAD software are introduced and applied for Conversion (multi view to isometric & Isometric to multi-view), sectional view of solids & 2-D Assembly of part drawings along with dimensioning and conversions used. Students will be able to apply the concepts to read & drawing Assembly Drawings & Production Drawings prevalent in industry.
270	Applied Mechanics Lab	MECH2112	Employability & Skill Development - The knowledge and experiences of this lab will help students to determine different material properties (mechanical) through standard testing equipments and testing processes.
271	Workshop Practice – II	MECH2113	Employability & Skill Development - Hands on training in detailed on machining exposure (Lathe, shapping, milling, drilling etc) and manufacrng procedures (Casting, welding etc.) are helpful for direct bearing on employability.
272	Fluid Machinery	MECH2201	Employability & Skill Development - Students will be able to classify and describe different hydraulic machines, their components, functions, performace curves and use those parameters for selection of a device in practical industrial application.
273	Kinematics of Machines	MECH2202	Employability & Skill Development - Kinematic design and analysis is one of the important step in designing a mechanical machine. Students will be able to select and kinematically synthesize different mechanisms, do velocity and acceleration analysis, select and design different transmission systems, cam design for specific application.
274	Primary Manufacturing Processes	MECH2203	Employability & Skill Development - This subject enhance in basic manufacturing by fundamental technological systems, lowers error rates and product failures, overall reducing huge costs historically faced by manufacturers.
275	Machine Drawing - II	MECH2211	Employability & Skill Development - Basic Sketching, Options aiding construction, Modelling, Editing, Modifying, Dimensioning tools & features of a solid modelling CAD software (CREO Parametric) are introduced through this Lab course. The knowledge help students to develop an insight about industrial design practice of various machine components which inturn help students take part actively in product developement and/or modifications in any company
276	Metrology & Measurement Lab	MECH2212	Employability & Skill Development - Students handle and learn to use very precision instruments to measure various parametrs of mechanical components, This skill will help them excel in Quality Control activity in any industry specially the precision ones.
277	Manufacturing Technology Lab	MECH2213	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools lke lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various componets. This skill will help students to select/ design/ maintain machine tools in an industry.
278	Material Testing Lab	MECH2214	Employability & Skill Development - Students handle and learn to use differnet materials testing equipment to measure various mechanical properties. This knowlege can apply directly in the industry and they develop themselves as a skilled operator.
279	Physics II	PHYS2001	Employability & Skill Development - Develop an idea of the different types of statistical distributions and be able to understand semiconductor behavior by application of statistical methods. Understand different dielectric materials, physical interpretation of magnetic properties of matter, and basic understanding of superconductivity. In all cases they must build an ability of addressing related problems and explore the applications of the different theories.
280	Physics II Lab	PHYS2011	Employability & Skill Development - Perform various experiments that will help them determine some very important material constants viz. dielectric constant, Hall coefficient, band gap of semiconductors etc., as well as some universal constants of great importance like Stefan's constant, Planck's constant etc. Develop skills of result analysis and graph plotting along with operational skills of the different experimental apparatus.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
281	RF IC Design and MEMS Technology	VLSI6101	Employability & Skill Development - Students will learn noise and interference performance metrics like noise figure, IIP3 and different matching criteria, wireless standards and various transceiver architectures, RF receiver front end, MEMS fabrication technologies, micro-systems technology for technical feasibility which will enhance their employability and skill development
282	Digital VLSI Design Laboratory	VLSI6111	Employability & Skill Development - Students will do hands on practice on Critical Path Modeling and Analysis, Sizing in Digital Design, n CMOS Design of Combinational Circuits and Modules, CMOS Design of Sequential Circuit, Setup and Hold Check, Layout of a system, DRC, LVS, Extraction using Industry Standard Cadence Virtuoso/Assura, Back-annotation and Post Layout Timing Analysis using Industry standard Spectra Circuit Simulator which will enhance their employability and skill development.
283	Communication Techniques	AEIE3101	Employability & Skill Development - Sample analog signal properly and Differentiate among pulse modulation & demodulation techniques and signal multiplexing for engineering solutions. Describe and determine the performance of coding schemes for the reliable transmission of digital representation of signals & information over the channel. Explain the concept of frequency reuse, channel assignment strategies and make use of wireless communication tools
284	Microprocessor- Architecture and Applications	AEIE3102	Employability & Skill Development - Develop the skill in program writing for 8085A microprocessor. Describe different types of memory and I/O interfacing with 8085A microprocessor. Describe the architecture of different types of programmable peripheral devices and their interfacing with 8085A microprocessor. Develop the skill to interface different types of I/O devices with 8085A microprocessor using programmable peripheral device.
285	Industrial Instrumentation	AEIE3103	Employability & Skill Development - Design different flow measuring devices and level measuring devices with necessary accessories for industry. Demonstrate working knowledge of temperature measuring devices. Design electronic instrumentation system for the acquisition of measurement data produced by measuring instruments for flow, level, temperature and pressure. Formulates industrial process parameters towards the analysis of process data
286	Control Systems	AEIE3104	Employability & Skill Development - Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
287	Microprocessors & Microcontrollers	AEIE3105	Employability & Skill Development - This course helps to get jobs in companies that work in embedded systems.
288	Sensors and Transducers Lab	AEIE3111	Employability & Skill Development - Experiment with temperature measuring sensors like AD590 IC sensor, RTD and thermistor. Performance study of capacitive transducer, LVDT, Pressure and displacement sensors. Rotational speed measurement using magnetic proximity sensor, stroboscopic principle. Performance studies of some optical sensors like LDR, photo diode and photo transistor. Design a suitable signal conditioning circuit for a given sensor.
289	Microprocessor Lab	AEIE3112	Employability & Skill Development - Design the interfacing of input/output devices with 8085 microprocessor using partial and absolute address decoding. Build assembly language program to control input/output devices for various applications. Analyze the processing of analog signal and generation of various analog signals using interfacing circuit. Realize the programming concept of hardware interrupts in 8085 microprocessor.
290	Industrial Instrumentation Lab	AEIE3113	Employability & Skill Development - Demonstrate the calibration process of pressure measuring devices using dead weight tester. Measure process parameters like flow, level, temperature, pressure, moisture and viscosity using different industrial instruments.
291	Control Engineering Lab	AEIE3114	Employability & Skill Development - Control the speed of dc motor using different controllers. Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
292	Microprocessors & Microcontrollers	AEIE3115	Employability & Skill Development - It gives the chance to work with actual microprocessors and microcontrollers, to program them for small projects that in turn helps to get jobs in companies that build small pieces of stand-alone or embedded systems with a microprocessor and/or a microcontroller in it.
293	Process Control	AEIE3201	Employability & Skill Development - Develop the mathematical model for the liquid, thermal and gas systems. Design and simulate the ON-OFF, P, PI, PID etc. controllers both in hardware and software using electronic components, simulink, MatLab, LabVIEW etc. and also knowledge of control valve. Design and develop the ladder logic program in PLC towards the solution of the sequential events performed in industry.
294	Electronic Instrumentation and Measurements	AEIE3202	Employability & Skill Development - Use electronic instruments like VCO, PLL, current mirror, charge amplifier, voltage to frequency and frequency to voltage converter. Explain the circuit operation of CRO, dual trace oscilloscope, delayed time base oscilloscope. Familiar about digital storage oscilloscope, spectrum analyzer. Explain the working of different types of digital voltmeters, digital frequency meter and digital display unit. Check the quality of a coil, capacitor using O meter.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
295	Advanced Microprocessors and Microcontrollers	AEIE3203	Employability & Skill Development - Develop the skill in program writing for 8086 microprocessor, 8051 and PIC microcontroller. Understand and realize the interfacing of memory, input/output devices with 8086, the interrupts of 8086 microprocessor, 8051 and PIC microcontroller and the use of timer/counter and serial data communication process in 8051 microcontroller. Apply the knowledge to interface different type of I/O devices with 8051 and PIC microcontroller.
296	Process Control Lab	AEIE3211	Employability & Skill Development - Develop skill to draw and explain P&I diagram of flow, pressure, level and temperature control loop. Apply software tool to study the close loop process responses. Create ladder logic diagram for various sequential operations commonly used in industrial environment. Provide engineering solutions of various societal, professional & environmental responsibilities
297	Electronic Instrumentation and Measurement Lab	AEIE3212	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Able to make statistical analysis on large number of data. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
298	Advanced Microprocessors and Microcontrollers Lab	AEIE3213	Employability & Skill Development - Develop 8051/ PIC 16F or 18F series microcontroller based systems to implement various tasks. Design the interfacing of display devices (LED/LCD) with microcontroller. Build program to control input/output devices like motor (stepper motor/servo motor), temperature sensor, key board, etc., with microcontrollers for various applications. Build program using microcontroller to generate different waveforms and perform pulse width modulation of a voltage signal. Design and implement an embedded system using 8051/ PIC 16F or 18F series microcontrollers.
299	Technical Seminar I	AEIE3221	Employability & Skill Development - Build up knowledge in the field engineering, with specialization related to Electronics and Instrumentation engineering and the ability to integrate information across disciplines. Prepare quality presentation on a topic with proper organization and demonstrate the content properly with the aid of audio-video, pictures and documents, etc. Communicate effectively by making an oral presentation before an evaluation committee. Interact efficiently with audience.
300	Fundamentals of Digital Signal Processing	AEIE3231	Employability & Skill Development - Perform mathematical operations on discrete time signals. Design algorithms of digital FIR and IIR filters according to the given specification and realize structure of a digital filter for given transfer function.
301	Mobile Communication	AEIE3232	Employability & Skill Development - Learn cellular concept and the strategies associated with cellular communication. Evaluate GSM and CDMA technologies with their architecture, frame structure, system capacity as well as services provided by them. Design wireless local area networks utilizing the wireless access protocols and determine the merits and limitations of 3G technology.
302	Opto Electronics and Fibre Optics	AEIE3233	Employability & Skill Development - Learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. Learn the various optical source materials, LED structures, quantum efficiency, Laser diodes, fiber optical receivers such as PIN APD diodes. Specify and analyze optical optoelectronic devices in optical fiber communication. Gain the basic concepts of optoelectronics, properties and industrial applications.
303	Biomedical Instrumentation	AEIE3241	Employability & Skill Development - Different sensors used to measure process variables with that of cardiac variables like- blood flow rate, blood pressure, heart sound, cardiac outputs etc.Design of cardiac pacemaker, Defibrillator or other therapeutic instruments. Understand the various method of medical imaging systems like-MRI, X-Rays, Ultrasounds along with the concept of bio-telemetry.
304	Advanced Sensors	AEIE3242	Employability & Skill Development - Acquaint the fundamentals of sensing materials, properties and industrial applications and understand microfabrication techniques. Explain the need for smart sensors and choice of materials in microfabrication techniques.
305	Non Conventional Energy Sources	AEIE3243	Employability & Skill Development - Estimate the scope of wind energy for electricity generation and explain the process to harness energy from nonconventional energy sources like geothermal, tidal, ocean-thermal and wave. Evaluate the economical use of renewable energy resources compared to conventional energy sources.
306	Genetics	BIOT3101	skill development in genetic disorders, genetic counseling
307	Bioinformatics	BIOT3102	skill development in genomics, databases, programming and structure prediction
308	Recombinant DNA Technology	BIOT3103	skill development in DNA cloning, restriction enzymes and DNA editing
309	Transfer Operation-II	BIOT3104	skill development in advanced transfer operations techniques
310	Immunology	BIOT3201	skill development in immunological techniques, immune disorders
311	Plant Biotechnology	BIOT3202	increases employment opportunity in plant tissue culture sector
312	Bioreactor Design and Analysis	BIOT3203	skill development in bioreactor types, mode of action
313	Molecular Modeling & Drug Designing	BIOT3241	increases employment opportunity in drug designing and pharmaceutical industry
314	Biophysics of Macromolecules	BIOT3242	skill development in biophysical techniques
315	Biosensors and Diagnostics	BIOT3243	increases employment opportunity in biosensor and bioinstrumentation industry
316	Biofertilizers and Biopesticides	BIOT3244	increases employment opportunity in pesticides and biofertilizer sector

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
317	Chemical Reaction Engineering	CHEN3102	Employability & Skill Development - Student will be able to differentiate and analyze between ideal and non ideal reactors using suitable model equations and to utilize the design strategies of non ideal reactors. They can also apply the concepts of RTD as a tool for designing and scale up industrial reactors.
318	Separation Process - II	CHEN3103	Employability & Skill Development - Students will be able to design various process equipment pertaining to separation process like Cooling Tower, Extractor, Dryer. Students will be able to classify different membrane separation and will be able to evaluate the merits of the process.
319	Numerical Methods of Analysis	CHEN3104	Employability & Skill Development - Student will learn to mathematically model using linear algebra, students will be able to relate the dependent and independent variables to define the final equation. Students will be able to identify the broad category of numerical method to solve the corresponding mathematical problem. It will be also possible to model an engineering process using partial differential equations (PDE), students will be able to identify the type of PDE and its associated boundary conditions. Students will develop the numerical form of the governing equation by applying principles of numerical differentiation.
320	Mass Transfer laboratory	CHEN3111	Employability & Skill Development - The objective of the course is to provide an overview of different mass transfer operation relevant to process industry. They can learn to operate Distillation column, Drying Unit, Absorption Column etc.
321	PEDD- I	CHEN3112	Employability & Skill Development - Student can learn to design and Drawing Pressure Vessel - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw industrial scale Reactor.
322	Chemical Reaction Engineering Laboratory	CHEN3113	Employability & Skill Development - Student will learn to operate different type of chemical reactor that are used in industry. They can also learn to analyze the performance of a real reactor by generating its RTD profile.
323	Polymer Science & Engineering	CHEN3131	Employability & Skill Development - The students will be exposed to the knowledge of developing biodegradable and biocompatible polymers for maintaining ecology of the soil. They can learn various types of polymer composites to develop new materials. The students will be knowledgeable in identifying and controlling the use of hazardous behaviour of plastics in the industrial applications and social applications, particularly health issues.
324	Petrochemical Technology	CHEN3132	Employability & Skill Development - Students will learn the design and operation of petrochemical complexes. Students will familiar with major polymerization processes on industrial scale.
325	Material Science & Engineering	CHEN3133	Employability & Skill Development - The students will acquire adequate understanding about the phase diagram of different valuable and commonly used alloys and materials in engineering and do necessary modifications in the composition of the materials like pure metals, alloys like steel, brass etc, polymeric materials, ceramic and composites like FRP, RC casting, Plywood boards, high performance cutting tools, Cermets etc. The students will be knowledgeable in eliminating or introducing structural defects or foreign elements in the original crystal lattice of the materials like preparation of innovative alloys, p & n - type semiconductors, piezoelectric materials etc so as to tailor the properties of the materials according to requirement.
326	Process Dynamics, Instrumentation and Control	CHEN3201	Employability & Skill Development - Student can explain the basic principles & importance of process control in industrial process plants. They can specify the required instrumentation and final elements to ensure that well-tuned control is achieved and can explain the use of block diagrams & the mathematical basis for the design of control systems.
327	Project Engineering	CHEN3202	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
328	PEDD- II	CHEN3211	Employability & Skill Development - Student can learn to design and Drawing of Heat Exchangers - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw various flow measuring devices such as venturimeter, orificemeter, pitot tube etc.
329	Numerical Methods Laboratory	CHEN3212	Employability & Skill Development - The course illustrates the basics of MATLAB or equivalent software programming. Student can develop the logic for the chosen numerical method and can write MATLAB code. They learn to compile the final outcome of the given problem with expected result either in numeric or in graphical representation.
330	Seminar I	CHEN3221	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
331	Nano Technology	CHEN3231	Employability & Skill Development - Student can classify the various types of process used in nano-manufacturing of 1D, 2D and 3D nanostructures. They can Identify the processes necessary to build a particular nano structure and can exhibit knowledge of the relevant physical, chemical, mechanical, electrical and optical properties of materials in nano configuration. Students decide on measurements and instruments used for characterizing a nanomaterial.
332	Bioprocess Engineering	CHEN3233	Employability & Skill Development - students can design bioreactors for free enzymatic reaction under enzyme uninhibited/inhibited conditions. They can use principles of bioprocess engineering for selecting and designing suitable contacting device for immobilized enzyme reactions under mass transfer/bioreaction control condition.
333	Analysis of Structures II	CIVL3101	Employability: To assess the advanced methods of calculating force that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
334	Soil Mechanics II	CIVL3102	Employability: To analyze the stability of retaining walls, slopes and to determine the bearing capacity and settlement of shallow foundation.
335	Highway & Traffic Engineering	CIVL3103	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
336	Environmental Engineering	CIVL3104	Employability: To assess various characteristics of water, waste water and their removal techniques, various treatment units and their designs
337	Design of R.C.C. Structures	CIVL3105	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structural elements.
338	Soil Mechanics Lab I	CIVL3111	Employability: To visually identify different types of soil and to determine soil properties.
339	Concrete Technology Lab	CIVL3112	Employability: To test the basic properties of the ingredients of concrete, fresh and hardened concrete properties.
340	Environmental Engineering Lab	CIVL3113	Employability: To determine experimentally the various properties of water as well as waste water.
341	R. C. C. Design & Detailing	CIVL3121	Employability: Able to analyse and design reinforced concrete building for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing and produce design calculations and drawing in appropriate professional format
342	Design of Steel Structures	CIVL3201	Employability: Able to analyse and design steel structures for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
343	Foundation Engineering	CIVL3202	Employability: To analyze pile foundation and sheet pile structures on the basis of sub-soil exploration results and to assess different types of ground improvement techniques.
344	Prestressed Concrete	CIVL3203	Employability: To learn the concepts of analysis and design methods of Prestressing using high strength materials
345	Soil Mechanics Lab II	CIVL3211	Employability: To determine the consolidation and shear strength parameters of soil.
346	Transportation Engineering Lab	CIVL3212	Employability: The objective of Transportation Engineering laboratory is to determine some of the properties of coarse aggregates and bitumen.
347	Steel Structure Design & Detailing	CIVL3221	Employability: Able to analyse and design steel structures such as factory shed for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
348	Railway & Airport Engineering	CIVL3231	Employability: To have a detailed knowledge of every aspect of railway engineering like rails, sleepers, ballasts, their use and functions. To have a detailed knowledge regarding airport runway, its design and multiple parameters that are taken into consideration for construction of airport.
349	Advanced Surveying	CIVL3232	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Advanced surveying includes aerial survey, photogrammetry, etc.
350	Design of Tall Structures	CIVL3233	Employability: Learn and apply the fundamental and in-depth concepts required by a civil engineer to design tall/ high rise structures above 50 to 100 m.
351	Soil Stabilization & Ground Improvement Techniques	CIVL3234	Employability: To investigate different methods for improving the stability of the existing ground by reducing its permeability and increasing its overall strength.
352	Object Oriented Programming using C++	CSEN3004	Employability & Skill Development - Ability to develop the object oriented application using C++ and improvement of performance of solution using exception handling will enhance the employability
353	OOPs Laboratory	CSEN3014	Employability & Skill Development - Hands on experience of object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O, other standard language constructs and other features of the C++ language including use of templates, and handling exceptions improves programming skill & Employability
354	Formal Language & Automata Theory	CSEN3101	Employability & Skill Development - This is the basic course that teaches the students the underlying theory of computation - what can be computed and what not. The jobs that has the requirement of building new compiler for a new language or capture a input from the user pertaining to a specific regular expression must need this knowledge.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
355	Database Management Systems	CSEN3102	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course.
356	Operating Systems	CSEN3103	Employability & Skill Development - Anybody working at the system level in the industry need this course. Also those who work the application layer also need to have a solid idea how the operating system operates at the backend in order make the implementation efficient.
357	Computer Architecture	CSEN3104	Employability & Skill Development - This course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
358	Data Structure & Algorithm	CSEN3106	Employability & Skill Development - increases employment opportunity in IT programming sector
359	Database Management Systems Lab	CSEN3112	Employability & Skill Development - This gives a hands-on chance to write queries and learn the different commands that a Database Administrator (DBA) needs to execute and hence helps jobs of becoming a DBA. Also good knowledge of this is required for groups writing a banking software or an ERP software.
360	Operating Systems Lab	CSEN3113	Employability & Skill Development - A must course for students who look for jobs as a system administrator and or developers that need system level knowledge.
361	Computer Architecture Lab	CSEN3114	Employability & Skill Development - This course complements the Architecture theory course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
362	Computer Networks	CSEN3201	Employability & Skill Development - Anybody working in a networking company, like a internet service provider, a mobile service provider, a company that builds networking hardware like CISCO or write networking software for other third party vendors need such a course.
363	Software Engineering	CSEN3202	Employability & Skill Development - Any software engineer working in development project or maintenance project will need this knowledge.
364	Data Base Management System and Computer Networking	CSEN3205	skill development In Information Technology sector
365	Data Structure & RDBMS	CSEN3206	Employability: to understand Linear Data structures , Recursion: Design of Recursive algorithm.
366	Computer Networks Lab	CSEN3211	Employability & Skill Development - It complements the theory course in networking and helps the students to become confident with the basic hardware and software required to be handled in a company that needs to manage a network.
367	Software Engineering Lab	CSEN3212	Employability & Skill Development - It complements the theory course; students learn all the practical aspects of software engineering through mini-projects that are sometimes close replicas of what they do in the industry after joining.
368	System Administration Lab	CSEN3213	Employability & Skill Development - Every software firm need at least one system administrator or a team depending on its size and this course trains up the students for that role.
369	RDBMS Lab	CSEN3216	Employability : To perform Experiments on Database on RDBMS Platform (Oracle)
370	Computer Graphics & Multimedia	CSEN3280	Employability & Skill Development - The students who are seeking jobs in graphics company that help in developing animation for films or content generation need this.
371	Artificial Intelligence	CSEN3281	Employability & Skill Development - This is must course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc.
372	Web technologies	CSEN3282	Employability & Skill Development - Anybody developing web applications for nay company, whether on the client side or server side will find this course very helpful.
373	Advanced Java Programming	CSEN3283	Employability & Skill Development - It prepares the students for companies that develop software in JAVA-based technologies, which is a high percentage for the last two decades.
374	Computer Graphics & Multimedia Lab	CSEN3285	Employability & Skill Development - It complements the corresponding theory course; helps student to learn developing graphics software required in animation companies.
375	Artificial Intelligence Lab	CSEN3286	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
376	Web technologies Lab	CSEN3287	Employability & Skill Development - A very helpful course for students who will join companies writing software for web applications.
377	Advanced Java Programming Lab	CSEN3288	Employability & Skill Development - It gives a hands-on experience on both client-side and server-side programming in JAVA and associated technologies.
378	Seminar I	CSEN3297	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry.
379	Microelectronics And Analog Vlsi Design	ECEN3103	Employability & Skill Development - Understanding of the IC Fabrication Process Flow leading to the practical realization of the scaled MOSFETs, Design MOS circuits of practical importance e.g., common-source amplifiers and differential amplifiers will enrich employability & develop skills.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
380	Digital Communication	ECEN3105	Employability & Skill Development - Application of mathematical concepts to analyze the source coder and channel coder blocks of the digital communication system, analysis of error performance of a baseband receiver in digital communication system, understanding of various digital modulation, demodulation techniques and concept of OFDM and Spread Spectrum Modulation system will enhance employability & develop skills.
381	Microelectronics And Analog Vlsi Design Lab	ECEN3113	Employability & Skill Development - Experiments on the basic principle of operation of NMOS and PMOS, VLSI sub-circuits etc will enhance employability & develop skills.
382	Microprocessors, Microcontrollers & Systems Laboratory	ECEN3114	Employability & Skill Development - The concepts of CPU, timing and control signals I/O devices, and various BUS structure, knowledge about interrupts, stack and subroutine, concept the architecture of 8086 family & ARM basics understanding of interfacing of processor with memory and I/O devices and analysis of microcontroller 8051 architecture will increase the employability & develop skills
383	Digital Communication Laboratory	ECEN3115	Employability & Skill Development - Hands-on experiments on Implementation and study Line codes, Analysis and comparison of time domain and frequency domain representation of various digital modulation and demodulation schemes will increase employability & develop skills.
384	Digital Vlsi Design	ECEN3201	Employability & Skill Development - Industry Requirement level learning on VLSI Design Cycle, Style and Methodology, ability to construct Physical Layout Design and Stick Diagram of Digital Gates, ability to interpret Si Testing and Debug related algorithms and Fault Modeling will enhance the Employability and develop skill.
385	Digital Signal Processing & Applications	ECEN3202	Employability & Skill Development - The concept of z-transformation, convolution, knowledge of discrete-time Fourier transform to interpret DFT, FFT and design of transfer functions of IIR/FIR filters will enhance employability & develop skills.
386	Digital Vlsi Design Laboratory	ECEN3211	Employability & Skill Development - Backend Design using Industry Standard Mentor Graphics CAD Tool including Eldo Circuit Simulator & Frontend design using XILINX-Vivado Simulator will enrich employability and develop Skill.
387	Digital Signal Processing & Applications Laboratory	ECEN3212	Employability & Skill Development - Hands on experiments on application of different transformation tools-z-transform, discrete fourier transform, fast fourier transform on signals and study on the frequency response of FIR and IIR digital filters and use of DSP processors for analysis of different real time signals will improve the employability & develop skills.
388	Telecommunication Systems	ECEN3234	Employability & Skill Development - Concepts of signaling techniques, setting up links, working principles and practical applications of FAX, EPABX, EFT, Email, ISDN etc, knowledge of EWSD, NGN, ADSL ports will increase the employability & develop skills
389	Electrical Machine-II	ELEC3101	Skill development in- Study of various operations of Synchronous machines and Induction machines
390	Power System-I	ELEC3102	Skill development in study of various methods of conventional power generation. Employability- To develop the electrical design and the mechanical design of power transmission system and to analyze the performance of different types of transmission lines. Study of the underground cables, different type of distribution systems and power factor correction techniques provides employability.
391	Signals & Systems	ELEC3103	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
392	Data Structure and Database Concept	ELEC3104	Employability & Skill Development - Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
393	Electrical machine Lab.-II	ELEC3111	Employability/Entrepreneurship on various testing of Synchronous machine and induction machines
394	Power system-I Lab.	ELEC3112	Skill development to evaluate ABCD parameters of transmission line and to analyse dc distribution network. Measurement of the break-down strength of different insulating materials and earth resistance provides employability.
395	Signals & Systems Lab	ELEC3113	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
396	DBMS Laboratory	ELEC3114	Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
397	Electronic Instrumentation	ELEC3131	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
398	Illumination Engineering	ELEC3132	Employability - Design and develop energy efficient indoor lighting schemes for proper illumination following different standards
399	Power System-II	ELEC3201	Employability and skill development in representation of power system, symmetrical and unsymmetrical fault analysis, power flow and stability analysis. Different grounding schemes, protective relays, circuit breakers and different protection schemes used for different sections of power system provides employability.
400	Power Electronics	ELEC3202	Employability - analyze the operation of different power electronic converters
401	Control System	ELEC3203	Entrepreneurship in control engineering designing. Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
402	Microprocessor & Microcontroller	ELEC3204	Skill development in microprocessor and microcontroller based system by acquiring concept of 8051 and 8085 architecture, assembly language programming and interfacing circuits. Design and analyze various microprocessor based systems to implement suitable application. Entrepreneurship for designing electronic products by learning the building blocks and programming of microprocessor and microcontroller, analytical and computer tools thereby creating employability.
403	Power System-II Lab.	ELEC3211	Employability and skill development in electrical power system protection by operating different types of relay and become proficient with computer skill (e.g. ETAP) for the analysis of power system and its protection.
404	Power Electronics Lab.	ELEC3212	Employability - In study of various power electronics circuits
405	Control System Lab	ELEC3213	Entrepreneurship in control engineering designing. Skill development to Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
406	Microprocessor & Microcontroller Lab	ELEC3214	Provides Employability/Entrepreneurship, skill development in electrical engineering by acquiring the basic concepts and properties of 8085 microprocessor and 8051 microcontroller. Analyze and write assembly language programming related to data transfer, arithmetic and logical operations, stack and subroutine operations to design suitable application. Interface various peripheral device with 8085 microprocessor and 8051 microcontroller to implement suitable application.
407	Digital Signal Processing	ELEC3231	Skill development in time domain signal processing and in developing efficient architectures of DSP
408	Electrical Machine Dynamics	ELEC3232	Skill development in the study of dynamic behaviour of different electrical machine.
409	Economics for Engineers	HMTS3101	Employability & Skill Development - It gives a basic idea how the business operates. Any student who work in productization, try to become an entrepreneur or heads a group in which he/she is responsible for profit and loss gets immensely benefitted by it. Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
410	Principles of Management	HMTS3201	Employability & Skill Development - The students joining a software firm soon gets promoted into leadership positions and need to manage projects where they need expertise for both technical issues as well the capability for handling human resources. So this is a must for students joining the industry. Skills and roles of a Manager, functions, principles. Acquire knowledge of planning process, Organizational design and structure, staffing, Decision-Making, coordinating and controlling. Organization Behaviour: Motivation, Leadership, Communication, Teams and Team Work.
411	Personality Development	HMTS3221	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques to face the non-technical round of the job interviews, which is an important milestone that they have to cross before being employed in a multi-national company. Learn SWOT Analysis. Expert in Professional Communication. Developed skills like: Leadership & Team Playing, Motivation, Negotiation Skills, Conflict Management and Planning & Envisioning.



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
412	Foundation Course on Finance, Economics & Marketing	HMTS5201	Employability & Skill Development - Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
413	Operating Systems Concepts	INFO3101	Employability & Skill Development - Acquired skill of system software that manages computer hardware and software resources.
414	Computer Architecture	INFO3102	Skill development in computer system structuring, Synchronization, communication and scheduling in parallel systems
415	Software Engineering & Project Management	INFO3103	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
416	DBMS	INFO3104	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator.
417	UNIX & Operating Systems Laboratory	INFO3111	Employability & Skill Development - Attain the knowledge in Programming for task, scheduling and memory management techniques.
418	Computer Architecture Laboratory	INFO3112	Employability & Skill Development - Gain knowledge of VHDL Simulator and apply on various complex application.
419	Software Engineering & Project Management Laboratory	INFO3113	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
420	DBMS Laboratory	INFO3114	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
421	Communication Theory	INFO3131	Skill development to analyze and design analogue and digital communication systems.
422	Compiler Design	INFO3132	Employability & Skill Development - Gain Knowledge in checking syntax, testing automation and natural language processing which helps in Employability.
423	Discrete Mathematics	INFO3133	Employability/skill development-improves computational skills and data analysis.
424	Data Warehousing & Data Mining	INFO3201	Employability & Skill Development - Acquire skill related to Hadoop and Hadoop Eco-System, Access and Process Data on Distributed File System. Attain knowledge to Develop Big Data Solutions using Hadoop Eco System.
425	Computer Networks	INFO3202	Employability & Skill Development - Gain knowledge on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels
426	Advanced Java & Web Technology	INFO3203	Employability & Skill Development - Attain the skill on how to develop web pages using HTML, Java Script and CSS. Implementation of server side program using servlet and JSP.
427	Data Analytics Lab	INFO3211	Employability & Skill Development - Gain knowledge in core programming basics and program design with functions using Python. Analyze real world datasets and apply suitable clustering algorithms to group data based on similarity.
428	Computer Networks Lab	INFO3212	Employability & Skill Development - A study on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels
429	Advanced Java & Web Technology Lab	INFO3213	Employability & Skill Development - Attain the skill on how to develop web pages using HTML, Servlet and JSP program. Design XML document and DTD.
430	Seminar - I	INFO3221	Employability & Skill Development - Enhance employability due to knowledge of contemporary technology and communication skills.
431	E-Commerce & ERP	INFO3231	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
432	Computer Graphics & Multimedia	INFO3232	Employability through developing various applications which uses a multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video.
433	System Software and Administration	INFO3233	Employability & Skill Development - Learn the basics of system programs like editors, compiler, assembler, linker, loader, interpreter, debugger etc. Learn how to Install and manage disks and file systems.
434	E-Commerce & ERP Laboratory	INFO3236	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
435	Computer Graphics & Multimedia Laboratory	INFO3237	Employability & Skill Development - Acquire necessary skill for developing gaming and graphic environment .
436	System Software and Administration Laboratory	INFO3238	Employability & Skill Development - Configure different servers in linux system. Gain knowledge on how to Install and manage disks and file systems.
437	Artificial Intelligence	INFO3241	Employability & Skill Development - Motivates entrepreneurship in developing many applications like chat bot, increases business efficiency etc
438	Wireless & Mobile Computing	INFO3242	Employability & Skill Development - Helps in employability through understanding the issues surrounding the mobile platforms
439	Pattern Recognition	INFO3243	Employability & Skill Development - Acquired skill on how to recognize patterns by using machine learning algorithm.
440	Digital Logic Design	MCAP1101	Skill development to design applications of Sequential Circuits and Finite State Machines.
441	Introduction To Programming	MCAP1102	Skill development to apply high-level language to automate the solution for a problem.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
442	Numerical And Statistical Techniques	MCAP1103	Skill development to understand the basics of numerical and statistical techniques and how those can be abstracted through logical variables and connectives.
443	Discrete Mathematics	MCAP1104	Skill development for understanding mathematical solutions.
444	Management Information System	MCAP1105	Entrepreneurship for accomplishments of managerial goals.
445	Digital Logic Lab	MCAP1111	Skill development to implement the design of Sequential Circuits and Finite State Machines.
446	Programming Lab	MCAP1112	Employability in the field of computer programming.
447	Object Oriented Programming With Java	MCAP1201	Skill development for object oriented programming concept.
448	Data Structures	MCAP1202	Skill development to apply different types of data structures in algorithms.
449	Database Management Systems I	MCAP1203	Employability in the field of database management systems and Relational database.
450	Optimization Techniques	MCAP1204	Entrepreneurship to develop the idea of job sequencing to minimize the production time and costs, also to help production facility for staff allocation and equipment management.
451	Computer Organization And Architecture	MCAP1205	Skill development to understand the basic computer organization and architecture.
452	Object Oriented Programming Lab	MCAP1211	Skill development to solve real world problems using OOP techniques.
453	Data Structures Lab	MCAP1212	Skill development to evaluate solutions of a problem with different data structures to select suitable data structures for a solution.
454	Dbsms I Lab	MCAP1213	Skill development to apply Standard Query Language (SQL) for relational databases.
455	Dynamics of Machines	MECH3101	Employability & Skill Development - Effect of dynamic forces in a system have consequences such as unbalancing and vibration. So, the topics covered in this subject will help the students in designing and maintaining of a machine.
456	Heat Transfer	MECH3102	Employability & Skill Development - In industrial application many a time heat exchangers are required to be designed. This course gives a basic idea on this.
457	Design of Mechanical Systems-I	MECH3103	Employability & Skill Development - Knowledge acquired by students in this paper will help them to take part actively in designing any product or modification of any existing product for better performance.
458	Fluid Mechanics & Hydraulic Machines Lab	MECH3111	Employability & Skill Development - Hands on training on hydraulics equipment and hydraulic machines are helpful for direct bearing on employability.
459	Design Practice – I	MECH3112	Employability & Skill Development - In this paper students are discussed with industrial design practice of various machine components and also they are trained in various solid modeling tools of a CAD software. Knowledge on industrial design practice and modeling tools of a CAD software helps students take part actively in product development and/or modifications in any company.
460	Seminar-I	MECH3121	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
461	Fluid Power Control	MECH3131	Employability & Skill Development - Concepts on fluid power control may provide students an opportunity and a significant role in manufacturing industries.
462	Refrigeration & Air Conditioning	MECH3132	Employability & Skill Development - Theoretical concept of Refrigeration are required to design different refrigeration unit, calculating heat load etc.
463	Electrical Machines	MECH3133	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). A preliminary idea about the working principle and the characteristics of such machines will lead to an increased productivity in the shop floor.
464	Fluid Power Control Lab	MECH3136	Employability & Skill Development - In the practical class, identification of various components of a Hydraulic and Pneumatic system, preparation of circuits using those components, along with the calculation of input power requirement, speed of actuator are done, which are integral parts of selection of input parameters in machining operations in industrial application.
465	Refrigeration & Air Conditioning Lab	MECH3137	Employability & Skill Development - Identification of various key components of a refrigeration and air conditioning system and the calculation of COP are extremely important for employment in refrigeration, air conditioning, and cryogenic engineering which is imparted in this Lab.
466	Electrical Machines Lab	MECH3138	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). Hands on training or a preliminary idea about the working principle and the characteristics of such machines will lead to an increased productivity in the shop floor.
467	Total Quality Management (TQM)	MECH3141	Employability & Skill Development - Students must have adequate knowledge on usages of various statistical tools and the techniques to be applied in the Industries to maintain consistency in quality.
468	Finite Element Method	MECH3142	Employability & Skill Development - FEM is the backbone of numerical validation of any product under design. So, knowledge on this paper will help them to be an active member in the RnD team of any company.
469	Turbo Machinery	MECH3143	Employability & Skill Development - Theoretical concept of turbomachines are required to design different hydraulic plant, power plant etc.
470	New Product Development	MECH3144	Employability & Skill Development - Theoretical knowledge on new product development concepts involving need analysis, technology forecasting and development planning

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
471	Tool Engineering	MECH3145	Employability & Skill Development - Students understand directly tool geometry, cutting tool features suitable for adverse conditions and how to make a cutting tool.
472	Industrial Robotics	MECH3146	Employability & Skill Development - The topics covered in the course will help student to conceptualize, analyze, design and control of robots for different industrial applications.
473	IC Engines	MECH3201	Employability & Skill Development - Overall concept of conversion of fuel energy into mechanical energy including the various mechanisms which are required for conversion of motion will be highly applicable in automobile industry.
474	Machining Principle & Machine Tools	MECH3202	Employability & Skill Development - Machining and Machine tools are playing an important part in various manufacturing companies. It helps in delivering products and components to the maximum possible specifications. It is the main foundation for precision manufacturing.
475	Dynamics of Machines Lab	MECH3211	Employability & Skill Development - With the knowledge and experiences of this subject, students will be able to monitor vibration, measure unbalancing and do corrections, evaluate performance of governors, design a cam for specific application.
476	Applied Thermodynamics & Heat Transfer Lab	MECH3212	Employability & Skill Development - Practical knowledge on (i) dryness fraction of steam and (ii) various other devices involving convecting heat transfer coefficient will be an added advantage for students working in thermal power plant.
477	Seminar-II	MECH3221	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
478	Design of Mechanical Systems-II	MECH3251	Employability & Skill Development - In this paper students are taught about various machine component designs, like design of Gears, design of Breaks and Clutches, design of Pressure Vessels and design of Bearings. So detailed knowledge on this paper will give them a cutting edge to work with technical command in any mechanical company where these components are used extensively, or these machine elements are manufactured.
479	Mechatronics	MECH3252	Employability & Skill Development - Theoretical knowledge on industrial automation and control, CNC machines, robots and automated handling system.
480	Advanced Fluid Mechanics	MECH3253	Employability & Skill Development - Theoretical concept of advanced fluid mechanics are required to design modern hydraulic plant, power plant etc.
481	Design Practice - II Lab	MECH3256	Employability & Skill Development - Students are taught in detail about various Pre-processing and Postprocessing tools of a FEA software in this practical paper. Knowledge on numerical analysis of any object or product under various loading and boundary conditions using a FEA software gives the students immense capability and a fair opportunity to work in the R-n-D team of any core company or to do a research work efficiently in their higher studies.
482	Mechatronics Laboratory	MECH3257	Employability & Skill Development - Programming, operation and use of industrial automated equipment
483	Advanced Fluid Mechanics Lab	MECH3258	Employability & Skill Development - Practical knowledge of various hydraulic machines and piping systems would be helpful for students employment in various power plants.
484	Maintenance Engineering	MECH3261	Employability & Skill Development - Owning machines and plants are not enough unless the students have fair knowledge about how well the machines are maintained, upkept, mended and tended for restoration of plant performance.
485	Renewable Energy Systems	MECH3262	Employability & Skill Development - Comprehensive know-how must be acquired by students for different renewable energy systems in the backdrop of increasing global energy demands and fast-depleting fossil fuel reserves, including their selection criteria, design and maintenance for specific applications.
486	Materials Handling	MECH3263	Employability & Skill Development - A comprehensive knowledge must be acquired by the students for different material handling equipments, including its selection criteria, maintenance and design with the specific applications.
487	CAD/CAM	MECH3264	Employability & Skill Development - CAD/CAM/CAE are the three pillars in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
488	Operations Management	MECH3265	Employability & Skill Development - CAD/CAM/CAE are the three pillars in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
489	Energy Resource	REEN5101	Employability & Skill Development - Student will learn different resources of renewable energy and how to extract energy economically to address global energy crisis
490	Renewable Energy I	REEN5102	Employability & Skill Development - Students will be able to explain the basics of solar PV cells and relevant parameters for its characterization. They will be able to explain the important features of first to third generation solar cell technology. They can also learn to design solar thermal collector

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
491	Materials for Energy conversion systems	REEN5104	Employability & Skill Development - Student will learn about the manufacturing process of nano-material and its characterizations techniques. They can design photovoltaic material and its electronic properties for the solar energy application and understand the role of selection for the wind turbine material and it required properties.
492	Solar Laboratory	REEN5111	Employability & Skill Development - Student will learn handle solar module and also learn to characterize them. Student will learn to handle solar power measuring instruments.
493	Energy Devices Laboratory	REEN5112	Employability & Skill Development - Student will learn to handle device and instruments that are used for storage and measurement of energy production and distribution
494	Seminar -I	REEN5121	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
495	Design of Heat Transfer Equipments	REEN5141	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes. They can design heat exchanger network also.
496	Renewable Energy II	REEN5203	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
497	Non solar laboratory	REEN5211	Employability & Skill Development - Student will be able to design processes producing alternative source of energy. They can characterize the quality of fuel generated from alternative source and operate electrical equipments for power generation.
498	Internship	REEN5221	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to an industry engaged in harvesting energy from renewable resource
499	Seminar -II	REEN5222	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
500	Measurement and Control for Energy System	REEN5241	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameters for the process related to energy production and distribution.
501	Energy & Environmental Impact Analysis	REEN5242	Employability & Skill Development - The students will be able to identify the Basics of Environmental Engg. Principles need for carrying out EIA. The students will be able to analyze different technologies and Legislations / Rules. The students will be able to implement Do's & Don'ts practices for Renewable Energy Endeavours.
502	Electronics Instrumentation & Control for Energy System	REEN5244	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameters for the process related to energy production and distribution.
503	Telemetry & Remote Control	AEIE4101	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design biotelemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution systems for telemetry in process plants.
504	Power Electronics and Drives	AEIE4102	Employability & Skill Development - Gain practical knowledge about power electronic devices. Analyze various single phase power converter circuits and understand their applications. Practical knowledge about using simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
505	Telemetry & Remote Control Lab	AEIE4111	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design biotelemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution system for telemetry in process plants.
506	Power Electronics and Drives Lab	AEIE4112	Employability & Skill Development - Gain practical knowledge about power electronic devices and simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
507	Industrial Training Evaluation	AEIE4131	Employability & Skill Development - This course has been designed for the students to gain real life working experience by visiting a Process Plant / Industry for a specified period. Thus, each & every student of AEIE should undergo industrial training for 4 weeks, during 6th – 7th Semester break in reputed Private / Public Sector / Government organization / companies.
508	Advanced Process Control	AEIE4141	Employability & Skill Development - Develop the process models in digital domain and analyze stability of the system in digital domain. Able to develop algorithms for design of various controllers. Learn the architecture of automation systems. Familiar with the protocols used for designing of automation systems.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
509	Soft Computing	AEIE4142	Employability & Skill Development - Design and analyze the different components of fuzzy controller appropriately to obtain the best possible fuzzy controller that can be applied to any process control systems. Acquire knowledge of different ANN terminologies to apply in solving control problems. Analyze and design algorithms for different supervised and unsupervised learning networks. Illustrate biological background and give idea about basics of genetic algorithm and its application in optimizing controller parameters
510	Power plant Instrumentation	AEIE4143	Employability & Skill Development - Design P&I diagrams for different control loops associated with thermal, hydal and Nuclear power plant. Investigate, formulate and analyze the safety requirements during power plant operation and accordingly able to design instrumentation systems for safety interlocks in power plant. Design Turbine supervisory instrumentation system. Apply engineering knowledge towards the treatment of water for industrial use. Apply contextual knowledge for analysis and measure of pollutant produced by thermal power plant.
511	Instrumentation and Telemetry	AEIE4181	Employability & Skill Development - Select the suitable pressure transducer, flow transducer, level transducer and temperature transducer for industry use. Understand the functional components of voltage, current and frequency telemetry. Familiar with the scheme of transmission of multiple sensor data based on time division multiplexing and frequency division multiplexing.
512	Introduction to Embedded Systems	AEIE4182	Employability & Skill Development - This introductory course helps students to learn the working principles of embedded systems, which might be essential for an automobile company to a company that develops that caters the clients manufacturing consumer electronic and or electrical goods. Design different embedded systems with microcontroller of different memory specification or RAM specification. Design single purpose processors and basic architecture and operation, multipurpose controller-architecture, operation, codes and programming. Understand the application of different RAMs and ROMs and interfacing. Interface microcontroller and design the hardware and software to control the operation of I/o devices like LCDs, Keyboard, Stepper Motor, A/d converter etc.
513	Project I	AEIE4191	Employability & Skill Development - Project should be on any topic having relevance with Electronics, Instrumentation, Electrical or inter-disciplinary field of engineering. Project should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
514	Comprehensive Viva Voce	AEIE4231	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning. Gain confidence and inter-personal skills.
515	Technical Seminar II	AEIE4232	Employability & Skill Development - The main objective of this course work is to encourage self-learning in the field of student's own interest among the emerging areas of technology. The student is expected to do an extensive literature survey in his subjects of interest and present seminar on a research problem, available methods in literature, future trends, etc. to a group of experts.
516	Analytical Instrumentation	AEIE4241	Employability & Skill Development - Get ideas of different analytical methods like pH analysis, conductivity analysis etc.for liquid sample. Understand UV-VIS , IR spectroscopic techniques for the liquid analysis. Know X-ray spectroscopy and NMR spectroscopy for the analysis of sample. Familiar with gas chromatography and liquid chromatography for sample analysis.
517	Ultrasonic Instrumentation	AEIE4242	Employability & Skill Development - Know about ultrasonic equipments, A, B, and M-scan presentation of test indications and interpretation. Develop knowledge on different ultrasonic methods of applications. Apply the knowledge of ultrasonic instrumentation for non-destructive testing. Applications of ultrasonic instruments for measuring thickness, depth, flow and level. Applications of ultrasonic instrumentations in medical sciences.
518	Digital Control Systems	AEIE4243	Employability & Skill Development - Design of digital control systems with digital controllers through bilinear transformation; digital PID-controller; different class of digital controllers, general synthesis method, dead beat response design, Dahlin design, ringing and placement of poles.
519	Sensor Technology	AEIE4281	Employability & Skill Development - This subject enables students to grab the concepts and application of different mechanical, electrical and acoustic sensors. Acquire the fundamental knowledge in micro sensors, sensor materials, properties and industrial applications. Understand the application of IC technology and photolithography technique in micro sensors. Learn the basics of sensor networking, coding and smart sensors and propose a sensor system design to solve a problem, a very helpful course for working IOT.
520	Control Systems and Applications	AEIE4282	Employability & Skill Development - Models of control devices and systems - dc servomotors, ac servomotors, dc motor speed and position control, synchro. Basic control actions- Introduction to conventional controllers (P, PI, PD and PID) and application.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
521	Project II	AEIE4291	Employability & Skill Development - Demonstrate ability to identify and formulate real world engineering problems relevant to society needs. Apply knowledge of circuit design, sensor selection, signal processing, control system, embedded system and programming, etc., to implement the project work with proper time frame. Implement hardware model along with its relevant software programming, conduct experiments, analyze and interpret data and explain them. Develop interpersonal communication skill and demonstrate sound technical knowledge of their project work.
522	Animal Cell Culture & Animal Biotechnology	BIOT4101	increases skill development in cell culture techniques in diagnostics and research
523	Bioseparation Technology	BIOT4102	skill development in separation processes and techniques
524	Food Biotechnology	BIOT4141	increases employment opportunity for food processing and food preservation
525	Environmental Biotechnology	BIOT4142	skill development in environmental engineering and policies
526	Bioprocess & Process Instrumentation	BIOT4143	skill development in separation techniques
527	Modeling & Simulation of Bioprocess	BIOT4161	skill development in knowledge of modeling and simulation of biological pathways
528	Biomaterials	BIOT4162	increases employment opportunity in bioimplants sector
529	Biometallurgy	BIOT4163	increases employment opportunity in metallurgy sector
530	Proteomics and Protein Engineering	BIOT4164	increases skill development in proteomics tools
531	Human Genomics	BIOT4165	increases employment opportunity in human genomics research and analysis
532	Biosensors	BIOT4181	Employability & Skill Development - This subject familiarizes students with bio-recognition elements and introduces them to transducers and biosensors. Knowledge in this subject is beneficial to students for acquiring jobs in clinical and diagnostic sector, industrial sector, food and environment sector, defence sector and a host of other areas.
533	Biopolymers	BIOT4182	increases skill development in production of different products by biopolymer
534	Renewable Energy Technology	BIOT4241	increases employment opportunity in renewable energy sector
535	Tissue Engineering	BIOT4242	increases employment opportunity in tissue manufacturing and pharmaceutical sector
536	Biomedical Engineering	BIOT4243	increases employment opportunity in biomedical instrumentation sector
537	Post Harvest Technology	BIOT4244	increases employment opportunity in crop harvesting sector
538	Metabolic Engineering	BIOT4245	increases skill development in metabolic processes and pathways
539	Medical & Pharmaceutical Biotechnology	BIOT4246	increases employment opportunity in pharmaceutical industries
540	Basic Process Equipment Design	BIOT4247	increases employment opportunity in designing sector and processing sector
541	Computational Biology	BIOT4281	Increases employment opportunity in bioinformatics and drug designing sector Molecular Modeling and Dynamics: introduction to Open MM library; GROMACS as an example of GUI in the public domain; computer based drug design (public domain and proprietary); Mathematical modeling of cell growth kinetics; Embedded systems for computational biology: High throughput data collection, processing and analysis; LCMS, DNA microarrays and other applications; Systems biology and Metabolic Engineering.
542	Non-conventional Energy	BIOT4282	Employability & Skill Development - Application of the concepts of solar energy to design Photovoltaic cells and wind energy to design wind turbine , Understanding the concept of hydrogen energy as a clean fuel and characterize the hydrogen production process etc will enhance employability & develop skills.
543	Modeling Simulation & optimization	CHEN4103	Employability & Skill Development - students will be able to analyze the given system to mathematically formulate the complete optimization problem required.students will be able to select the appropriate separation process and process equipment, and will be able to apply heuristics for choosing the correct operating methods for the equipment.
544	Industrial Training	CHEN4131	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to a chemical industry
545	Seminar II	CHEN4132	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner
546	Reactor Design	CHEN4141	Employability & Skill Development - The course demonstrate the technique to design reactor that can handle multiphase multicomponent system of species.
547	Industrial Safety & Hazard Analysis	CHEN4142	Employability & Skill Development - Ability to use important technical fundamentals of chemical process safety and to impart basic Students get knowledge that allows to evaluate occupational safety and health hazards in the workplace. They can also be able to determine hazard and potential hazard areas and to adopt appropriate hazard controls. They can analyze the effects of workplace exposures, injuries and illnesses, fatalities.
548	Safety and Hazard Analysis	CHEN4181	Employability : Ability to understand and recognize the important technical fundamentals of chemical process safety and to impart basic knowledge that allows the students to evaluate occupational safety and health hazards in the workplace.
549	Project Management	CHEN4182	Employability & Skill Development - This subject is considered to be fundamental for achieving the target of cost, time and scope of chemical and mechanical engineering activity. This skill will enable students to excel in their respective area of work.
550	Plant Design	CHEN4221	Employability & Skill Development - Students will learn to design a chemical process industry and also can assess the techno-economic feasibility of the the plant.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
551	Catalysis & Catalytic Reactor Design	CHEN4241	Employability & Skill Development - Student will learn to identify and formulate problems in chemical and biochemical reaction engineering and find appropriate solutions. Student can able design bioreactors for both enzymatic and live cell catalyzed reactions.
552	Total Quality Management	CHEN4242	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
553	Total Quality Management & Assurance	CHEN4282	Skill development in understanding the significance of quality management inside and outside of the organization, to identify and control the quality of processes, to evaluate the process capabilities of different processes in any business process, to apply modern quality management like Six Sigma techniques. Skill development in various sampling techniques and develop different sampling plans to evaluate quality of various types of defects, to prepare network of activities involved in project for plant design or other business processes , to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method
554	Water Resources Engineering	CIVL4101	Employability: Water resources play an important role in the economic development of a nation. No one can imagine the life of living beings without the consumption of water. A water can use by the nation for various purpose such as hydro electricity, irrigation, etc.
555	Computer Application in Civil Engg	CIVL4111	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
556	Industrial Training Evaluation	CIVL4131	Employability: Industrial training, where a student undertakes a period of training with an organization usually during a semester break, act as an important part in preparing the student for a professional career. With the active involved preparation,the student learns about the industrial demands, skill set and work ethics.
557	Seminar II	CIVL4132	Entrepreneurship: To impart training to the students in collecting materials on a specific topic from journal or other sources and organise them into logical sequence and presenting the matter effectively both orally and as technical report.
558	Advanced Structural Analysis	CIVL4141	Employability: Civil engineers use structural analysis to assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces using matrix method applications.
559	Remote Sensing and GIS	CIVL4142	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.
560	Advanced Pavement Engineering	CIVL4143	Employability: The ultimate aim of pavement design is to ensure that the transmitted stresses due to wheel load are sufficiently reduced, so that they will not exceed bearing capacity of the sub-grade. Two types of pavements are generally recognized as serving this purpose, namely flexible pavements and rigid pavements.
561	Hydraulics Structures	CIVL4144	Employability: Without hydraulic structures, the world would be spending half of their time looking and fetching water. Hydraulic structures are built to make life easier, pleasant and secure. The building of these structures not been easy especially when civil engineering was not modernized.
562	Soil Dynamics and Machine Foundations	CIVL4161	Employability: Soil dynamics drive elemental cycles, have controlling roles in ecosystem functions, and are largely determinants of emergent properties (properties not obvious from the study of processes at finer levels of organization), such as decomposition rates, biodiversity, and system stability. A machine foundation necessitates a special concern as they are designed to transmit dynamic loads to soil strata in addition to static loads.
563	Structural Dynamics & Earthquake Engineering	CIVL4162	Employability: Structural dynamics of earthquake engineering: theory and application using Mathematica and Matlab provides civil and structural engineers and students with an understanding of the dynamic response of structures to earthquakes and the common analysis techniques employed to evaluate these responses
564	Environmental Pollution & Control	CIVL4163	Employability : To understand various types of global environmental issues and learn about the different kind of pollution .
565	Advanced R.C.C. Design	CIVL4164	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structures which are of high importance.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
566	Building Materials	CIVL4181	Employability & Skill Development - To construct any building, proper materials selection is very important part of the project. This subject prepare the promising engineers suitable for industry and also learn how to build the building with minimum cost and assess the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates, concrete, steel, etc.
567	Hydrology	CIVL4182	Employability: Hydrology has evolved as a science in response to the need to understand the complex water systems of the Earth and help solve water problems. Hydrologists play a vital role in finding solutions to water problems, and interesting and challenging careers are available to those who choose to study hydrology.
568	Environmental Pollution & Control	CIVL4183	Employability: Understand the essential concepts of Air and Noise pollution.
569	Project -I	CIVL4191	Employability: Students undertake a research/ industrial/practical oriented project work under the guidance of a particular faculty. In-depth knowledge on a particular topic helps the student to be industry ready.
570	Construction Planning and Project Management	CIVL4201	Employability : To understand the various construction equipments and its implementations , different building laws , CPM & PERT .
571	Comprehensive Viva Voce	CIVL4231	Employability: The objective of comprehensive viva-voce is to assess the overall knowledge of the student in the relevant field of Engineering acquired over 4 years of study in the undergraduate program .
572	Bridge Engineering	CIVL4241	Employability: Bridge engineering is an engineering discipline branching from civil engineering that involves the planning, design, construction, operation, and maintenance of bridges to ensure safe and effective transportation of vehicles, people and goods
573	Traffic Engineering and Transportation Planning	CIVL4242	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
574	Advanced Foundation Engineering	CIVL4243	Employability & Skill Development -
575	Finite Element Analysis	CIVL4244	Employability: Finite Element Analysis (FEA) is a method of analysing how a part or assembly will perform over its lifetime. FEA enables you to predict potential design issues and therefore minimise risk to your product, profits, and your business.
576	Remote Sensing and GIS	CIVL4281	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.
577	Principles of Surveying	CIVL4282	Employability & Skill Development - Surveying is the art of determining the relative position of various features above, on, or beneath the surface of the earth by means of different instruments. Students learn by their own hand the application of surveying and it is very much helpful to the industry and also develop their skills. The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
578	Project Planning and Management	CIVL4283	Employability & Skill Development - This subject help the students for employability because the students Think of their plan as a roadmap for stakeholders, break the project into a list of deliverables, Talk to their team, identify risks, create a budget, add milestones, set progress reporting guidelines etc.
579	Project II	CIVL4291	Employability: Students undertake a research/ industrial/practical oriented project work under the guidance of a particular faculty. In-depth knowledge on a particular topic helps the student to be industry ready.
580	Compiler Construction	CSEN4101	Employability & Skill Development - This courses teaches the students all the phases of thorough which a compiler runs while translating a code and also to write compiler for a given language. Though the writing a of new compiler does not arise everyday in the industry, still the concepts help a lot to write a cross compiler for translating code from one language to other and many times companies working in DSP s need to implement a language with a small set of instructions, though it most happens at assembly level, the concepts of compiler construction are difficult to ignore if one wants to contribute effectively in such projects or products.
581	Compiler Construction Lab	CSEN4111	Employability & Skill Development - It complements the theory course in compiler and helps the students to become confident with the in depth knowledge of how a program is compiled and how it really works; what are the data structures and techniques associated with it.
582	Industrial Training	CSEN4131	Employability & Skill Development - This course allows the students to get an exposure to the projects that are currently ongoing in a industry as an intern or a trainee. They acquire ample knowledge on how to execute real-life projects in the industry.
583	Seminar II	CSEN4132	Employability & Skill Development - Soft skills and presentation abilities constitute an important part of majority job profiles. This subject gives each student the much needed opportunity to work as a team, present to an audience and receive constructive feedback on their performance which helps them to identify areas that need improvement.



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
584	Information Retrieval	CSEN4141	Employability & Skill Development - This course is a must for students working in Natural Language Processing.(NLP) projects in the companies that develop projects/products requiring NLP. It may be softwares for social media, customer interface or even fraud detection.
585	Advanced Operating System	CSEN4142	Employability & Skill Development - Any system related jobs or companies developing linux based open source software have a need for this expertise.
586	Data Mining and Knowledge Discovery	CSEN4144	Employability & Skill Development - Many companies thrive on mined data from internet or customer data generated from online purchases, or by discovering patterns from financial data. These companies need professionals with the proper training in Data Mining.
587	Cloud Computing	CSEN4145	Employability & Skill Development - The days of proprietary infrastructure is fast receding and in practice more and more companies are becoming confident to keep their valued data on cloud. Under this scenario, many service-oriented companies also get huge projects that require a knowledge of cloud computing in the background and also have dedicated teams looking after cloud aspects. This course help our students to target those jobs.
588	Natural Language Processing	CSEN4161	Employability & Skill Development - In this age of automation and AI driven industry, NLP is the course that companies look for along with ML in the curriculum, so it helps the students to apply for these high-paying new-age jobs.
589	Cryptography and Network Security	CSEN4162	Employability & Skill Development - As internet banking and online purchases are increasing by leaps and bounds, the cases of fraud related to these technologies are on the rise. The knowledge of cryptography and cyber security have become a dire necessity while implementing these software. A few of our students work in specialized cryptography applications in the industry.
590	Graph Algorithms	CSEN4163	Employability & Skill Development - This course helps in a handful of companies that builds software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
591	Parallel Algorithm	CSEN4164	Employability & Skill Development - This advanced course helps students to learn how an algorithm can be executed simultaneously by dividing it into independent sub-algorithms, which is very much required by companies that design processors. Also a lot of research happens on this topic, so for higher studies also this is an important skill.
592	Web Intelligence and Big Data	CSEN4165	Employability & Skill Development - This course is about building 'web-intelligent' applications exploiting big data sources arising in social media, mobile devices and sensors, using new big-data platforms based on the 'map-reduce' parallel programming paradigm. Hence all data driven companies need this expertise.
593	Fundamentals Of Operating Systems	CSEN4181	Employability & Skill Development - Understanding the various design issues in process management , learning of operating system operation, structures etc will enhance employability & develop skills.
594	Web Intelligence and Big Data	CSEN4182	Employability & Skill Development - Understanding on the key issues in big data management and its associated applications in intelligent business and scientific computing, the knowledge of Big Data and web intelligence on industry applications etc will enhance employability , Entrepreneurship & develop skills.
595	Project I	CSEN4191	Employability & Skill Development - As part of this subject students work on a computing problem in a team and try to come up with insights and solutions to the problem, under the guidance of a mentor. This experience of working as a team and the exposure to problem analysis helps to groom them for their future professional commitments.
596	Distributed Algorithms	CSEN4241	Employability & Skill Development - Behind every computing process and every program design is an algorithm, that guarantees the success of the process when formulated properly. As computation becomes more distributed, the algorithm also evolves along with it. A knowledge of distributed algorithm design is must for many job profiles that deal with distributed systems.
597	Approximation Algorithms	CSEN4242	Employability & Skill Development - Optimization problems that are NP-hard are an important category of problems in computer science. Studying efficient approximation algorithms to find appropriate solutions to such problems prepare students to tackle research oriented job profiles that need knowledgeable candidates to tackle complex problems.
598	Pattern Recognition	CSEN4244	Employability & Skill Development - Extracting meaningful features from a vast repository of media resources is a very important line of work in recent times that arm employers with a wealth of information. Pattern recognition teaches the student how to empower machines with human recognition intelligence and thus extract useful and critical information.
599	Social Network Analysis	CSEN4245	Employability & Skill Development - In this current era of customised products and target oriented research and recommendations this subject is an essential addition. Students undertaking this subject learn how to look for patterns of relation among people and groups and thus enabling them make important deductions.
600	Mobile Computing	CSEN4246	Employability & Skill Development - The underlying network architecture of data communication in a mobile environment is a must to have knowledge for any computer science engineer. Knowing the concepts of such data communication is sure to give students an edge in the job market.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
601	Distributed Databases	CSEN4261	Employability & Skill Development - Most job profiles in computer science have one aspect in common and that is data storage. This is even more relevant in the current times of big data where the amount of data being generated has increased manifold and this data needs to be stored and accessed in a distributed environment. This subject provides knowledge that will familiarize students with the nuances of data storage and access.
602	Image Processing	CSEN4262	Employability & Skill Development - Any company working in computer vision (such as remote sensing, pattern matching) needs students who have attended this course.
603	Soft Computing	CSEN4263	Employability & Skill Development - Any project that requires to solve some NP-complete (hard) problems in real time, which are not solvable in polynomial time at all need such a course.
604	Machine Learning	CSEN4264	Employability & Skill Development - This is a one-level up course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc. Right now whole computation system is data driven and machine learning helps students to use it as a tool to provide data-driven services.
605	Real Time & Embedded System	CSEN4265	Employability & Skill Development - This advanced course helps students to learn the real-time working principles of embedded systems, how they communicate and process among themselves in real-time, which is very much required in this modern era of IOT.
606	Distributed Databases Lab	CSEN4271	Employability & Skill Development - Distributed Database Systems lab simulates real-world, hardware, software, and command-line interface environments. The DDBMS lab course covers fundamental concepts necessary for designing, using, and implementing database systems and applications; database modeling and design; languages and models provided by database management systems; and database system implementation techniques.
607	Image Processing Lab	CSEN4272	Employability & Skill Development - It complements the theory course in image processing and student learns various matlab and python based tools to do computations on various type of images, which is a must before joining any company in the computer vision or handling image processing projects.
608	Soft Computing Lab	CSEN4273	Employability & Skill Development - Students get a chance to do some basic projects, where various soft computing techniques like fuzzy logic, genetic algorithms and other evolutionary algorithms are learnt through real-life problems.
609	Machine Learning Lab	CSEN4274	Employability & Skill Development - It complements the theory course in Machine Learning and student learns various tools like tensorflow, azure and other python based tools to operate on various data-driven real life problems.
610	Real Time & Embedded System Lab	CSEN4275	Employability & Skill Development - Students get a chance to work on some Arduino projects that give the test of making something work on their own before joining the industry.
611	Fundamentals of RDBMS	CSEN4281	Employability & Skill Development - Master the basic concepts and understand the applications of database systems. Understand the basic database storage structures and access techniques. 6. Distinguish between good and bad database design, apply data normalization principles, and be aware of the impact of data redundancy on database integrity and maintainability. Construct queries and maintain a simple database using SQL. Apply database transaction management and database recovery.
612	Project II	CSEN4291	Employability & Skill Development - The team work skills and problem analysis skills that the students start to learn with the subject Project I are further intensified in this subject. The focus here is more on arriving at a solution, in the form of a research paper, or a website design etc. and presenting the solution to a distinguished audience. The experience of team work, solution-oriented approach and presentation skill help the students in acquiring and pursuing lucrative jobs.
613	RF & Microwave Engineering	ECEN4101	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills.
614	Coding & Information Theory	ECEN4102	Employability & Skill Development - Knowledge of entropy, mutual information and channel capacity for all types of channels, Estimation of the merit of various methods for generating and detecting different types of error correcting codes will develop the skill.
615	Advanced Communication Systems	ECEN4103	Employability & Skill Development - Understanding on different wireless networks and their operations, the current multiplexing and modulation schemes will enhance employability & develop skills.
616	RF & Microwave Engineering Laboratory	ECEN4111	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills
617	Advanced Communication Systems Laboratory	ECEN4113	Employability & Skill Development - Hands on experiments on working of fiber optic links, various real time applications of wireless communication system will enhance employability & develop skills.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
618	VLSI Design Automation	ECEN4181	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques that are required to build a chip in a precise manner, which is done by a robotic arm and at the nano meter scale, so precision really matters. All these skills are very much required in a multi-national EDA company. Determine logic and performance of CMOS combinational as well as sequential logic and apply the lambda based design rules. Construct physical layout design and stick diagram of digital gates. Classify between VLSI design cycle, style and methodology and also build various stages of miniaturization. Make use of various synthesis flow and HDL modeling in ASIC semi custom design. Build different logical synthesis algorithm.
619	Principles of Communication systems	ECEN4183	Employability & Skill Development - In this modern era of fast communication one must know all the different principles of communication, the course provides the students with all the basics that are required to work in a company that develops software for voice or data communication.
620	Remote Sensing using Satellites	ECEN4241	Employability & Skill Development - Realization of the physical, architectural and networking issues of the satellite system, concepts of basics of remote sensing principles and technology etc will enhance employability & develop skills.
621	Cellular and Satellite Communications	ECEN4281	Employability & Skill Development - Identify GSM and CDMA Cellular architecture and its various parameters. Multiple access techniques used for Satellite Communication. Understand various orbits, orbital parameters, satellite launch vehicles etc. Design uplink and downlink for satellite networks.
622	VLSI Design	ECEN4282	Employability & Skill Development - This course helps the learners to learn the basic principles of building various analog and digital circuits from scratch. Starting from CMOS. All these are very much required in a multi-national semiconductor company.
623	VLSI Testing & Verification	ECEN4283	Employability & Skill Development - Without testing no chip can go to the market and this course provides the learners all the knowledge of how to write a software that can perform the pre and postbond testing.
624	Seminar-I	ELEC4031	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.
625	Seminar-II	ELEC4032	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.
626	Electric Drives & Power Utilization	ELEC4101	Employability -Study of different drives system with its practical application and different braking schemes .Explain application field of drives in traction system . Knowledge of Other application in the field of electric heating ,welding and illumination engineering.
627	High Voltage Engineering	ELEC4102	Employability/Entrepreneurship-Generation, Measurement and Testing of high voltage
628	Electric Drives Lab	ELEC4111	Employability -Application of drives by using power electronics circuit for smooth control of various types of motor's speed.
629	Electrical Machine Design	ELEC4121	Employability/Entrepreneurship in Machine Design, design and develop transformer, induction motor, heating element and reactor, electronic
630	Advanced Power System	ELEC4161	Employability & Skill Development - Economic dispatch and Unit Commitment helps to know the effective usage of the power flow in GRID. Skill development to analyze the load Frequency control and voltage control. Knowledge of travelling waves, generation of overvoltages on transmission lines & its protection, different compensation techniques in power system and the application of FACTs provides employability & skill development in Power System. Introduce HVDC transmission.
631	Advanced Control System	ELEC4162	Employability -In the design for mathematical modeling of finding Transfer function of physical systems , Time response, compensating techniques etc,
632	Circuit Theory Analysis	ELEC4182	Employability : to understand network equation , laplace transform , graph theory , two port Networks etc .
633	Project - I	ELEC4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints
634	Electrical System Design	ELEC4221	Employability- Design power distribution system, installation design of multistoried residential building, designing of a substation, design of control circuit of lift mechanism, road lighting scheme, energy efficient lighting scheme.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
635	Fundamentals of Illumination Engineering	ELEC4282	Employability : to get acquainted with the laws of Photometry for calculation of illumination levels for different lighting operations .
636	Project - II	ELEC4291	Encourages entrepreneurship, skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints
637	Professional Development	HMTS4121	Entrepreneurship: The start-up ecosystem in India- Why entrepreneurship?, Indian tech start-up landscape, Stand-up India policies, funding agencies, market development, trends and best practices E-Commerce- India as a growing E-commerce market, Possibilities of growth, funding, niche retailers Make in India- New processes, Investments, Focus sectors, Makers of Make In India, Opportunities, Policies.
638	Organizational Behaviour	HMTS4201	Employability & Skill Development - A comprehensive knowledge of interpersonal and leadership skills, motivation, attitude and perception are essential for any job engagement. Organizational behaviour aims to empower students with such essential knowledge and make them ready to take on any responsibility with confidence and conviction.
639	Project Management	HMTS4202	Employability & Skill Development - Project management is considered to be fundamental for achieving the target of cost, time and scope of any engineering activity. This skill will enable students to excel in their respective area of work.
640	Bioethics & IPR	HMTS4203	Employability & Skill Development - increases skill development in bioethics guidelines, patenting and trademark
641	Introduction to Industrial Sociology	HMTS4281	Employability & Skill Development - Industrial sociology is an applied discipline. It is concerned with the study of human relations as they grow and operate in the field of industries. It deals with the sociological concepts that have relevance to industry. It concentrates upon the social organizations of the work place or industry.
642	Critical Gender Studies	HMTS4282	Employability: Gender studies in the two-year program is defined as “critical” Gender Studies, signaling the ways in which students are trained to critically analyze established ideas, systems, and inequalities that decrease the possibilities for women and men to fully reach their human potential.
643	Elementary Spanish for beginners	HMTS4283	Employability & Skill Development - In this course, students will learn both basic and advanced Spanish vocabulary, grammar and pronunciation, that helps in companies who headquarters in Spain or Latin American countries.
644	Internet Technology	INFO4101	Employability & Skill Development - Understanding best technologies for solving web client/server problems, analyze and design real time web applications, use Java script for dynamic effects and to validate form input entry.
645	Image Processing	INFO4102	Skill development in image processing and image programming helps in employability.
646	Internet Technology Laboratory	INFO4111	Employability & Skill Development - Gain knowledge in client side programming ,interactive web applications .
647	Image Processing Laboratory	INFO4112	Skill development in image processing and image programming helps in employability.
648	Industry Competence Laboratory	INFO4121	Employability & Skill Development - Helps in employability through a project with industry orientation aspects directly suggested by experienced person from Software Industry. Also develop skill for creating Requirement Specification of allotted project with industry specified Requirement Specification Standard. Develop manual testing modules as guided by industry expert.
649	Industrial Training Evaluation	INFO4131	Employability & Skill Development - Helps in employability through a real life industry environment and also work as a part of the team . Gather experience of team work ,work sharing and work scheduling in real time scenario.
650	Distributed Operating System	INFO4141	Employability & Skill Development - Learn about operating system design and implementation including Operating system structure,Synchronization, communication and scheduling in parallel systems
651	Cyber Law & Security Policy	INFO4142	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.
652	Fundamentals of Cloud Computing	INFO4143	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing.
653	Cyber Crime & Cyber Security	INFO4181	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.
654	Cloud Computing	INFO4182	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing. Understanding of the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc & system, network and storage virtualization and outline their role in enabling the cloud computing system model will enrich employability & develop skills.
655	Project - I	INFO4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
656	Comprehensive Viva Voce	INFO4231	Employability & Skill Development - Gain knowledge about contemporary issues in various subjects.
657	Parallel Computing	INFO4241	Employability & Skill Development - The use of parallel processing for running advanced application programs efficiently, reliably and quickly.
658	Natural Language Processing	INFO4242	Employability & Skill Development - The ability of a computer program to understand human language as it is spoken.
659	Cryptography & Network Security	INFO4243	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet.Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network.
660	Soft Computing	INFO4244	Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
661	Fundamentals of Cryptography	INFO4281	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet.Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network. Understanding of various tools and protocols for different levels of security, principles of public-key cryptosystems, hash functions, and digital signature will enhance employability & develop skills.
662	Soft Computing Application	INFO4282	Skill development to identify interactive problems, reproduce optimal solution, to determine complexity of computation, to assemble different techniques to sketch a hybrid system, able to interpret the problems in terms of time and space, justify optimal solution and able to predict the running time of the program Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
663	Project - II	INFO4291	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints.
664	Operation Research and Optimization techniques	MATH4181	Employability & Skill Development - Operations Research (OR) is a field in which students use mathematical and engineering methods to study optimization problems in Business and Management, Economics, Computer Science, Civil Engineering, Electrical Engineering, etc. This subject focuses on deterministic optimization techniques, which is a major part of the field of OR followed by several efficient algorithms for solving linear programs, integer programs, and nonlinear programs.
665	Linear Algebra	MATH4182	Employability & Skill Development - This course covers matrix theory and linear algebra, emphasizing topics useful in other disciplines. Linear algebra is a branch of mathematics that studies systems of linear equations and the properties of matrices. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering and most importantly in any company that requires machine learning for its projects
666	Probability and Stochastic Process	MATH4281	Employability & Skill Development - This course makes students gain familiarity with probability and stochastic processes concepts which they need for their experiments and research. It also covers theoretical concepts of probability and stochastic processes pertaining to handling various stochastic modeling. This course provides random variable, distributions, moments, modes of convergences, classification and properties of stochastic processes, stationary processes, discrete and continuous time Markov chains and simple Markovian queueing models, all of this is very much essential for companies using machine learning to boost up their sales.
667	Advanced Computational Mathematics and Graph theory	MATH4282	Employability & Skill Development - Advanced Graph Theory focuses on problem solving using the most important notions of graph theory with an in-depth study of concepts on the applications in the field of computer science. This course provides an in-depth understanding of Graphs and fundamental principles and models underlying the theory and algorithms. Emerging applications of Graph Theory in Computer Science domain will be covered for significant impact. Through this subject students will have intimate knowledge about how the graph theory play an important role to solve the technology driven and research oriented problems. It is a shot in the arm for the students who pursue higher studies in Computer Science as well as those who work for companies working in EDA, traffic simulation etc.
668	Design And Analysis Of Algorithms	MCAP2101	Skill development to design and analysis of algorithms.
669	Data Communication And Computer Network	MCAP2102	Employability in the field of computer networking.
670	Database Management Systems Ii	MCAP2103	Employability in the field of database applications.
671	Operating System	MCAP2104	Skill development in the field of system administration.
672	Algorithm Lab	MCAP2111	Skill development to understand the algorithm.
673	Unix And Network Programming Lab	MCAP2112	Employability in the field of networking and understand the cocept of UNIX operating system.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
674	Dbms Ii Lab	MCAP2113	Employability through familiarizing with PL/SQL programming including stored procedures, stored functions.
675	Software Engineering	MCAP2201	Entrepreneurship for design, development and implementation of software based on requirements.
676	Web Technology	MCAP2202	Employability in the process of understanding the concept of Web Technologies along with applications.
677	Computer Graphics	MCAP2203	Skill development to understand the detail of Computer Graphics.
678	Intelligent Systems	MCAP2204	Skill development to gather and analyze data and communicate with other system.
679	Software Engineering Lab	MCAP2211	Entrepreneurship for developing a quality software for customer as per requirements.
680	Web Technology Lab	MCAP2212	Employability for developing the web pages using HTML, CSS, JavaScript, XML, PHP with SQL for database connectivity
681	Graphics Lab	MCAP2213	Employability in the field of Graphic designing.
682	Power Plant Engineering	MECH4101	Employability & Skill Development - Coal based thermal power plant, Hydroelectric power plant, Nuclear Power plant are taught in this subject which are very core knowledge in Mechanical Engineering and key to employment in Power Sector.
683	Advanced Manufacturing Technology	MECH4102	Employability & Skill Development - This subject enhance in precision manufacturing by smart technological systems, lowers error rates and product failures, overall reducing huge costs historically faced by manufacturers.
684	Operations Research	MECH4103	Employability & Skill Development - Understanding and acquiring the knowledge for problem solving & decision making from various alternatives from a large number of constraints must be learned by the students for selecting the least risk with an optimum plan in the current business scenerio.
685	IC Engine Lab	MECH4111	Employability & Skill Development - Practical knowledge on (i) working principle of IC engines with their operational characteristics and (ii) various components like valves, fuel injectors etc. will be an added advantage for students working in automotive industries.
686	Machining & Machine Tools Lab	MECH4112	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools like lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various componets. This skill will help students to select/ design/ maintain machine tools in an industry.
687	Industrial Training Evaluation	MECH4131	Employability & Skill Development - Get an idea of industrial set up and its associated complexity, evaluate the classroom knowledge against the real life application, learn the sequence of activities that lead to a finished product from the raw material and learn about activities other than design and manufacturing that are necessary for producing the goods and services.
688	Computational Methods in Engineering	MECH4142	Employability & Skill Development - Different numerical methods and its application on engineering are learned and apply them in R&D sector or research
689	Quantity Production Method	MECH4143	Employability & Skill Development - More than 60% of the manufacturing Industries have restructured their factories or the manufacturing systems to become lean producers (less wastages) , making goods of superior quality ,cheaper, faster in a flexible way.Students should be well versed on the same & to be responsive in their respective Industrial environment.
690	Computational Fluid Dynamics	MECH4144	Employability & Skill Development - Students will get job opportunities in various emerging technologies including R&D sectors.
691	Quantitative Decision Making	MECH4181	Entrepreneurship : Understand the meaning and appreciate importance of Quantitative Decision Making.
692	Project I	MECH4191	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.
693	Advanced Manufacturing Lab	MECH4211	Employability & Skill Development - Students program and run most advanced CNC Lathe, Electro Discharge Machine and Robot. They will be in a position to successfully run such machines present in modern industries.
694	Design of an Industrial Product	MECH4221	Employability & Skill Development - Develop manufacturing drawings of the components and General Assembly drawing of the complete product/ system along with its Bill of Material and this very much helpful for direct employability.
695	Comprehensive Viva Voce	MECH4231	Employability & Skill Development - This will be an evaluation of the student's overall mechanical engineering concept and ability to grasp all the 8 semester courses undertaken by the student and it is directly helpful for employability.
696	Mechanical Handling of Materials	MECH4281	Employability : To Interpret the importance of materials handling
697	Aerodynamics	MECH4282	Employability : to Learn fundamental physical and analytical principles of aerodynamics, Apply the knowledge of aerodynamics in design of turbo-machine blades, vehicles etc

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
698	Project II	MECH4291	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.
699	Energy Management and Audit	REEN6101	Employability & Skill Development - Student can learn a systematic, one-time procedure and a long-term strategy dedicated to continuous improvement and energy efficiency. They can learn the methodology of energy audit process and its classification. Student can also classify industry from energy consumption aspect.
700	Renewable Energy III	REEN6102	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
701	Renewable Energy Laboratory	REEN6111	Employability & Skill Development - Students will learn the skill to handle equipment that can produce and measure renewable energy from sun, wind and biomass.
702	Energy Transmission Technology	REEN6141	Employability & Skill Development - Student will learn how energy is transmitted over long and short distances. They will also understand the power grid management. Student will learn how renewable power can be fed to the grid.
703	Energy Trading and Pricing	REEN6142	Employability & Skill Development - Student can learn about energy market organization and design. They can get an exposure on how energy is traded globally and how it is priced.

Mapping of courses to employability / entrepreneurship / skill development for the year 2017-18			
Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	Micro-Electronic Devices and Circuits	AEIE5101	Employability & Skill Development - Detail analysis Op-Amp circuits to understand loading effects in application circuits. Select MOS transistor as per datasheet parameters to design a simple current mirror. Analyze the DC performance of single-stage analog amplifiers containing these circuit elements. Compute terminal voltage and current characteristics for MOS transistors under a variety of conditions.
2	Digital Signals and Systems	AEIE5102	Employability & Skill Development - Design digital FIR and IIR filters according to the given specification. Realize decimator, interpolator and filter banks using multirate signal processing algorithms. Calculate ensemble averages, joint moments, linear mean square estimation; ensemble averages, autocorrelation Matrices, ergodicity, power spectrum, Response of linear systems to random input.
3	Advanced Industrial Instrumentation	AEIE5103	Employability & Skill Development - Apply the measurement and analysis techniques of different polluting gasses produced by thermal power plant. Know the operation and control of distillation column. Apply the instruments needs for safety purpose of different hazardous area of the plant.
4	Process Instrumentation LAB	AEIE5111	Employability & Skill Development - Understand the activity and importance of Boiler Drum in an industry. Calibrate and test the instruments. Simulate, tune and control different processes. Understand principle of modeling and control through experiments.
5	Digital Signal Processing LAB	AEIE5112	Employability & Skill Development - MATLAB programs to determine time domain properties of the discrete time signals. Determine FFT and DFT of a discrete time signal. Design and implement FIR and IIR digital filters in MATLAB. Implement real time FIR and IIR digital filters and FFT algorithm using DSP kit like C6713 DSK.
6	Seminar-I	AEIE5121	Employability & Skill Development - The seminar should be on any topic having relevance with Instrumentation engineering and related areas of technology. Seminar work shall be in the form of presentation to be delivered regularly throughout the semester.
7	Mechatronics	AEIE5131	Employability & Skill Development - Integrate mechanical, electronics, control and computer engineering to model mechatronic systems. The complete design building, interfacing and actuation of a mechatronic system for a set of specifications. Learn different types of interface buses, communication networks, A/D conversions, DAS, data recording and logging etc required for mechatronic systems.
8	Measurement and System Design	AEIE5132	Employability & Skill Development - Formulate the structure of generalized measurement system. Develop the mathematical model of any measuring instrument. Calibrate and give specification of any measurement system. Analyze the measurement data.
9	Optical Instrumentation	AEIE5133	Employability & Skill Development - Learn the techniques of communications using optical fiber. Learn the structures and performance of photo detectors (like photo diode, PIN diode, APD etc). Explain the techniques of measurement of distance, length, velocity, acceleration, current, voltage using laser. Acquire knowledge on basic principle of holography and its uses in different fields such as nondestructive testing, medical field etc.
10	Process Control System Design	AEIE5201	Employability & Skill Development - Process mathematical modeling and study the techniques of modeling. Understand the process dynamics in general and analyze it in few industrial applications. Design process control system applying different linear, non-linear and soft-computing techniques. Employ proper system identification technique to identify unknown system and acquire knowledge of computer control.
11	Micro Sensor Science and Technology	AEIE5202	Employability & Skill Development - Apply the concepts of IC fabrication in sensor as well as semiconductor technology. Understand the micromachining processes (Bulk/ Surface /LIGA) and fabrication steps viz. deposition (CVD, Stuttering/ epitaxy, ion implantation etc.), lithography, etching (dry/wet, RIE/ DRIE) of micro-sensors. Understand the packaging/ testing of microsensors along with signal conditioning circuitry in real time systems. Analyze the application of smart sensors in IoT and medical/ aro-space/telecommunication/ instrumentation fields.
12	Instrumental Methods of Analysis	AEIE5203	Employability & Skill Development - Different spectroscopic methods and understand their use. Identify different components of spectrometers and acquire knowledge about their functioning. State the fundamental properties of different types of chromatography and able explain their working principle and application. Give comprehensive idea about Electron microscopy.
13	Embedded Systems	AEIE5204	Employability & Skill Development - Learn the architecture of AVR microcontrollers and develop embedded systems using it. Demonstrate working knowledge of embedded systems software with Linux and Python. Complete design of an embedded system with functional requirements for hardware and software components including processor, networking components and sensors, along with applications, subsystem interfaces and middleware.
14	Embedded Systems LAB	AEIE5211	Employability & Skill Development - Interface a sensor with microcontroller and monitor its input by displaying the measured value in LCD or PC. Implement PWM, FIR filter using PIC or ARM microcontrollers.
15	Virtual Instrumentation LAB	AEIE5212	Employability & Skill Development - Handle the LabVIEW software for signal analysis. 2. Study and analyze time and frequency response of process model. 3. Acquire real time signal for processing and control. 4. Check stability by applying different stability criterion.
16	Seminar-II	AEIE5221	Employability & Skill Development - Enhance presentation and communication skill. Gain information on latest technological developments related to instrumentation, control, communication and other relevant areas related to instrumentation engineering. Carry out literature survey and find out research problems.



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
17	Digital Image Processing	AEIE5231	Employability & Skill Development - Learn how images are formed, sampled, quantized and represented digitally and processed by discrete, linear, time-invariant systems. Apply transformation algorithms such as DFT, DCT, Discrete Sine, Walsh, Hadamard, Slant, Haar, KLT, SVD and Wavelet transform to any given image. Compress a given image by applying lossy and loss less image coding techniques. Perform image enhancement, restoration, morphological operation and segmentation of a given image. Analyze a given image by extracting features from it and by using object recognition techniques.
18	Industrial Automation Technology	AEIE5232	Employability & Skill Development - Human Machine Interface: Operator & Engineering Interface – Features, Functions and Requirements. Trends & Practices: Computer Integrated Manufacturing/Processing, Management Information Systems; Safety Instrumented Systems (SIS) – Risk analysis and reduction methods, SIF & SIL considerations, IEC 61508 requirements; Wireless Communication – Remote Networks, LAN, HART.
19	Statistical and Bio-signal Processing	AEIE5233	Employability & Skill Development - Case study-I: Application to biomedical signals: Analysis of continuous EEG signals, Single channel analysis; Multiple channel analysis: Mapping; Elimination of artifacts; sleep EEG analysis. Case study-II: Application to biomedical signals: Analysis of continuous ECG signals: Measurements, Processing of ECG, Artifact removal, Statistical methods and models for ECG; Heart rate variability: Time-domain methods of HRV analysis; Frequency-domain methods of HRV analysis.
20	Chemistry I	CHEM1001	Employability & Skill Development - Understanding the operating principles and reaction involved in batteries and fuel cells and their application. Knowledge of synthesizing Nanomaterials and their applications in industry, carbon nano tube technology is used in every industry now-a-days. Ability of synthesizing bio fuels as a renewable and environment friendly alternative source for natural fuel. To understand chemical compositions and reactions is very much essential for mechanical equipment and instruments for their stability and life. This subject is important for this purpose and in industry it has wide applications.
21	Chemistry I Lab	CHEM1011	Employability & Skill Development - Chemistry teaches useful skills. Because it is a science, learning chemistry means learning how to be objective and how to reason and solve problems. Helps you to understand current events, including news about petroleum, product recalls, pollution, the environment and technological advances. The students will be able to determine the alkalinity, chloride ion present and total hardness and amount of calcium and magnesium in a given water sample. Able to develop titration skill.
22	Introduction to Computing	CSEN1201	Employability & Skill Development - It gives the basic knowledge of programming, teaches how to write loops, use pointers in C, in short teaches for the first time how to code in procedural programming language. It is basically the bread and butter of a computer science engineer.
23	Introduction to Computing Lab	CSEN1211	Employability & Skill Development - Teaches them the basics of programming from scratch using C. So this is the single most important subject which chooses a programmer's job in life, and the majority of the students choose to do so.
24	Algorithms and Complexity	CSEN5102	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement implementing complex algorithms and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
25	Advanced Database Management Systems	CSEN5103	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend are benefitted by this course. They also get the knowledge and concept of distributive database and their working principle, which is very much required in today's jobs requiring distributed implementation of the software.
26	Advanced Programming and Problem Solving	CSEN5104	Employability & Skill Development - It gives the advanced knowledge of programming, in short teaches for the first time how to code in procedural programming language. It is basically the bread and butter of a computer science engineer.
27	Advanced Computer Architecture	CSEN5105	Employability & Skill Development - This advanced course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
28	Database Management Systems Lab	CSEN5113	Employability & Skill Development - This gives a hands-on chance to write queries and learn the different commands that a Database Administrator (DBA) needs to execute and hence helps jobs of becoming a DBA. Also an advanced knowledge of this is required for groups writing a banking software or an ERP software.
29	Advanced Programming and Problem Solving Lab	CSEN5114	Employability & Skill Development - Teaches them the advanced concepts of programming. So this is the single most important subject for those who choose a programmer's job in life, and the majority of the students choose to do so.
30	Seminar I	CSEN5197	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry. It also gives an exposure to the latest research domains that they are going to explore in depth during their final year projects.
31	Theory of Computation	CSEN5201	Employability & Skill Development - This is an advanced course that teaches the students the underlying theory of computation - what can be computed and what not. The jobs that have the requirement of building new compiler for a new language or capture an input from the user pertaining to a specific regular expression must need this knowledge.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
32	Advanced Operating Systems	CSEN5202	Employability & Skill Development - Anybody working at the system level in the industry need this course. Also those who work the application layer also need to have a solid idea how the operating system operates at the backend in order make the implementation efficient. Not only these, they get the advanced knowledge of Real time OS and Distributive OS also that help in getting jobs in companies building those OS.
33	Advanced Computer Networks	CSEN5203	Employability & Skill Development - Anybody working in a networking company, like a internet service provider, a mobile service provider, a company that builds networking hardware like CISCO or write networking software for other third party vendors need such an advanced course.
34	Operating Systems Laboratory	CSEN5212	Employability & Skill Development - A must course for students who look for jobs as a system administrator and or developers that need advanced system level knowledge.
35	Computer Networks Laboratory	CSEN5213	Employability & Skill Development - It complements the theory course in networking and helps the students to become confident with the basic hardware and software required to be handled in a company that needs to manage an advanced network.
36	Term Paper Leading to Thesis	CSEN5214	Employability & Skill Development - It helps the students to write a proper technical documentation or manual on which they are working.
37	Basic Electronics Engineering	ECEN1001	Employability/Entrepreneurship- Analysing various electronic circuits and devices. Design different application specific circuits associated with diodes operating both in forward and reverse bias. Analyze various biasing configurations of Bipolar Junction Transistor and categorize different biasing circuits based on stability. Design and implement various practical purpose electronic circuits and systems meant for both special purpose and general purpose and analyze their performance depending on the type of required output and subsequently the applied input.
38	Basic Electronics Laboratory	ECEN1011	Employability & Skill Development - Familiarisation with passive and active electronic components such as Resistors, Inductors, Capacitors, Diodes, Transistors (BJT) and electronic equipment like DC power supplies, Multimeters, CRO, Signal generators etc. Determine and study the characteristics of different electronic components (diode, transistors, OP AMP etc) through circuitry. Handling of devices, biasing properly, plotting graphs to understand behaviour of devices, handling of instruments to measure parameters.
39	Advanced Digital communication	ECEN5101	Employability & Skill Development - Students will learn about the transmission techniques, synchronization in digital communication. They will know about the modulation schemes, OFDM etc. The students will acquire knowledge about the CDMA in details. The students will have clear idea about estimation and detection schemes. They will be able to design reliable channel codings. They will understand the differences between coding schemes. The students will be able to analyse the digital communication quality enhancing their employability in Communication Industry
40	Advanced Digital Signal Processing	ECEN5102	Employability & Skill Development - Students will know about the different transforms applied in signal processing. They will have knowledge about LTI systems, Digital filters. The students will know about multi- rate processing, wavelet transforms. They will solve problems on FFT and DFT. The students will know about the comparison of filters. They will be able to apply the knowledge of wavelets in developing advance systems leading to start up opportunities and entrepreneurship
41	Advanced Microwave Communication	ECEN5103	Employability & Skill Development - Students will be able to Identify high frequency electromagnetic wave propagation characteristics through guided media. They will be able to analyze microwave passive components and circuits. Students should be able to enhance their knowledge on semiconductor and vacuum tube devices operating at high frequency. They will be able to design high frequency filters and amplifiers. Such knowledge ensures enhancement in employability of students.
42	Advanced Communication Laboratory	ECEN5111	Employability & Skill Development - The students will be able to measure radio parameters. They will perform data communication using optical fiber and will use Smith's chart for microwave measurements enhancing their employability
43	Design and Simulation of Communication Systems Laboratory	ECEN5112	Employability & Skill Development - Students will be able to Design graphical user interfaced models of various communication systems/ subsystems with the help of suitable advanced software e.g. MATLAB/ OCTAVE/LABVIEW/ NS/ PUFF/ IE3D/ ANSOFT/ HFSS/ CST/ QUALNET/ MICROWAVE OFFICE etc. for detailed study of their operating principle and their performance vis-a-vis practical limitations like, channel bandwidth, noise, attenuation etc. Hence enhances their employability
44	Advanced Computer Communication & Networking	ECEN5131	Employability & Skill Development - Students will be able to apply the basic taxonomy and terminology of the computer networking area. They will be able to Identify the different types of network devices and their functions within a network. Understand internetworking principles, routing principles and algorithms such as IP, IPv6, distance vector, and link state. Students will be able to gain expertise in some specific areas of networking such as the design and maintenance of individual networks. Such knowledge helps in skill development of students seeking carrier in Network Security and communication.
45	Telecommunication Systems & Engineering	ECEN5132	Employability & Skill Development - Students will know about the different telephone networks, ADSL etc. They will have knowledge about digital telephone systems and local area networks- features and parameters. The students will be aware of ISDN and its operation. They will be able to calculate the efficiency of a tel network. They will know about the various 802.11 standards and their applications. They will know about ATM operation and ATM networks leading to skill development for communication Industry.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
46	Statistical Communication	ECEN5133	Employability & Skill Development - Students will know about the different matrices and filters used in communication systems. They will have knowledge about modeling of signals. The students will know about techniques of detection. The students will be able to differentiate between filters. They will learn about signal properties and processes. The students will learn about stochastic models for possible application and hence help in skill development.
47	Remote sensing techniques and application	ECEN5135	Employability & Skill Development - The students will know and understand solar activity, the features of radiation pattern, study of meters and study of spectroscopy and its importance. Such knowledge will enhance employability of students
48	Basic Electrical Engineering	ELEC1001	Employability/Entrepreneurship- Analysing various electrical circuits and machines. Operate DC Machines and analyze Starters and speed control of DC motors. Analyze single and three phase AC circuits. Know the operation of single phase transformers and three phase induction motors.
49	Basic Electronics Engineering Lab	ELEC1011	Employability/Entrepreneurship- Analysing various electronic circuits and devices. Familiarisation with passive and active electronic components such as Resistors, Inductors, Capacitors, Diodes, Transistors (BJT) and electronic equipment like DC power supplies, Multimeters, CRO, Signal generators etc. Determine and study the characteristics of different electronic components (diode, transistors, OP AMP etc) through circuitry.
50	Business English	HMTS1101	Employability & Skill Development - It helps the students to communicate effectively in english that helps in all possible job interviews they face. Organizational Communication: Agenda & minutes of a meeting, notice, memo, circular, Project Proposal, Technical Report Writing, Organizing e-mail messages, E-mail etiquette, Tips for e-mail effectiveness and Levels or Channels of Communication.
51	Language Practice Lab (Level 1)	HMTS1111	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Learn Voice Modulation, Accent training. Conversational Skills/Spoken Skills Writing with a purpose---Convincing skill, argumentative skill/negotiating Skill (These skills will be repeated in oral skills). Writing reports/essays/articles---logical organization of thoughts.
52	Co-curricular Activities	HMTS1121	Employability & Skill Development - This course aims at instilling a sense of social responsibility. This objective can be achieved by bringing in awareness about the contemporary issues relevant to the GenX and Gen Y through enlightened discussions and active participation.
53	Mathematics I	MATH1101	Employability & Skill Development - The concepts Linear algebra that is given helps in all jobs that uses Machine Learning. Apart from that, the knowledge of Calculus helps all students who choose their career in the domain of Image Processing. Apply the concept of rank of matrices to find the solution of a system of linear simultaneous equations. Engineers are able to apply the concept of differentiation and integration for functions of multi variables with their applications. Able to combine the concepts of gradient, curl, divergence, directional derivatives, line integrals, surface integrals and volume integrals to solve different engineering problems.
54	Mathematics II	MATH1201	Employability & Skill Development - The basics of Graph Theory that is introduced here is a must for all the engineers that get employed in any of the knowledge-based industries. Also a whole lot of students go for companies working in map-based algorithms like Mapline, Uber, OLA etc. for whom this is a must course. Construct differential equation as a mathematical model of physical systems. Apply basic graph algorithms for searching and finding minimal spanning tree and shortest path. Evaluate distance, angle between planes and shortest distance between two skew lines in three dimension.
55	Advanced Mathematical Methods	MATH5101	Employability & Skill Development - Model and solve non-constrained and constrained optimization problems by classical optimization techniques. Model and solve engineering optimization problems using different algorithms.
56	Advanced Discrete Mathematics	MATH5101	Employability & Skill Development - The portion that deals with Advanced Number Theory introduces to the students for the underlying Mathematics that they ultimately use in a group/company working on Cryptography or Data Security. Also the other things that are taught like Logic is essential for anybody working in the industry, whatever be the domain.
57	Advanced Mathematics	MATH5103	Employability & Skill Development - Students will be able to describe the way of writing mathematical model for real-world optimization problems. They will be able to Identify Linear Programming Problems and their solution techniques. They will be able to categorize Transportation and Assignment problems. Students will be able to apply the way in which Game Theoretic Models can be useful to a variety of real-world scenarios in economics and in other areas. They will be able to convert practical situations into non-linear programming problems. They will be able to solve unconstrained and constrained programming problems using analytical techniques. Hence the knowledge acquired through this course helps in developing skill sets for better employability
58	Workshop Practice	MECH1011	Employability & Skill Development - Hands on training on machining exposure (Lathe, shaping, milling, drilling etc) and manufacturing procedures (Casting, welding etc.) are helpful for direct bearing on employability. Making of a wooden pattern, a matched profile from MS plate and an internal and external thread. Making of a green sand mould using the pattern made; stepped pin in a centre lathe. Making of square prism from a round shaft by Shaping Machine and square prism from a round shaft by Milling Machine. Arc Welding practice and making of a welded joint. Sheet Metal forming & Brazing

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
59	Engineering Drawing	MECH1012	Employability & Skill Development - Acquaintance with different drafting equipment & accessories; Gain the concept of scale of drawing. The concept and skill of different types of projections of engineering drawing is practiced. Engineering drawing is the essential language to the engineers and this course help the students to develop themselves as an designer which is very much essential for employability.
60	Engineering Mechanics	MECH1101	Skill developed to draw free body diagram of a system under equilibrium / non equilibrium along with the consideration of frictional forces. Able to perform engineering design calculations and able to analyze dynamic systems. Basic concepts of Engineering Mechanics directly and indirectly help the design process in the industrial products and in personal life.
61	Engineering Thermodynamics and Fluid Mechanics	MECH1201	Employability & Skill Development - Measurement of fluid pressure: Piezometer, Manometers -Simple and Differential U-tube manometer, Inverted tube manometer, Inclined tube manometer. Application of Bernoulli's equation-problem on pipe line. Measurement of flow rate: Venturimeter and orificemeter. Static pressure, Dynamic pressure, Stagnation pressure-measurement of velocity by Pitot tube.
62	Physics I	PHYS1001	Employability/Skill development for ability to think critically and Analyze the data. The syllabus covers the working principle of laser, and apply the knowledge in different lasing system and their engineering applications in holography. Imparting the essence and developing the knowledge of controlling distant object like satellite, data transfer through optical fiber, implication of laser technology, handling materials in terms of their electrical and magnetic properties etc. Some of the students do research in architectural aspects of Quantum Computing, for them the basics of Quantum Mechanics that are introduced here is essential. Also the portion of optics that specifically deals with fibre optics helps the students in the related industries.
63	Physics I Lab	PHYS1011	Employability/Skill development for ability to think critically and Analyze the law of nature. To gain practical knowledge by applying the experimental methods to correlate with the Physics theory. To learn the usage of electrical and optical systems for various measurements. Apply the analytical techniques and graphical analysis to the experimental data. Understand measurement technology, usage of new instruments and real time applications in engineering studies. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group.
64	VLSI Device & Modelling	VLSI5101	Employability & Skill Development - Students will learn BJT, MOSFET Modeling, Short Channel Effect, MOS Scaling and Industry Standard Compact Modeling which will enhance their employability and skill development
65	Digital IC Design	VLSI5102	Employability & Skill Development - Students will learn CMOS Circuit Design, Layout Design, VLSI Design Methodology, HDL Coding, EDA Logic Synthesis and P & R flow which will enable their employability and skill development
66	Microelectronic Technology & IC Fabrication	VLSI5103	Employability & Skill Development - Students will learn various fabrication steps and methods of basic and advanced Technology which will enhance their Skill development
67	VLSI Frontend Design & CAD Tools	VLSI5111	Employability & Skill Development - Students will do hands on practice on Industry Standard Xilinx Vivado Simulator, VHDL coding and Simulation/Verification, Finite State Machine coding using HDL, Test Bench HDL coding for RTL Verification, FPGA synthesis, Place & Route and Hardware Programming, ARM Cortex based Software/Hardware which will enable their employability and skill development
68	VLSI Backend Design & Technology CAD Tools	VLSI5112	Employability & Skill Development - Students will do hands on practice on Industry Standard Cadence Virtuoso Schematic editor, Spectra Circuit Simulation, Layout Edit and Verifications, Pre Layout and Post Layout Simulation and Analysis which will enable their employability and skill development
69	Embedded Systems	VLSI5131	Employability & Skill Development - Students will learn Embedded System Design Methodology, Micro controller Design, Embedded Memory Architecture and I/O Configuration which will enhance their employability and skill development
70	Digital Communication Technology	VLSI5132	Employability & Skill Development - Students will learn baseband digital signal transmission (PCM DM ADM ADPCM), Digital Modulation (BPSK DPSK QPSK etc), Multiplexing and multiple access (TDM/TDMA FDM/FDMA ALOHA CSMA CSMA-CD etc), Optimum Detection and Estimation technouques which will enhance their employability and skill development
71	VLSI Processor Architecture	VLSI5201	Employability & Skill Development - Students will learn instruction set architecture (ISA), CISC and RISC Architecture, DSP Processor Architecture, Accelerator, Multi-Threaded Processor, Processor cores in SOC Design which will enhance their employability and skill development
72	VLSI Design, Verification and Testing	VLSI5202	Employability & Skill Development - Students will learn embedded Memory Design in VLSI Chip, VLSI Interconnect Design, Industry Standard STA (Static Timing Analysis) Method, Set-up and hold Checks for Timing Verification, process variation and Clock skew concepts and Si Testing/Debug Methods which will enable their employability and skill development
73	Analog IC Design	VLSI5203	Employability & Skill Development - Students will learn MOS-based analog VLSI sub-circuits, relevant small-signal equivalent circuit models, they will learn basic concepts in RF design and the geometry, models of passive devices used in the RFIC, they will learn data converters, switched-capacitor circuits, operation of the oscillator circuits. All these learnings will enhance their employability and skill development

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
74	Analog VLSI Design Laboratory	VLSI5213	Employability & Skill Development - Students will do hands on practice on Analog VLSI sub-circuits and amplifier circuits, layout for analog VLSI sub-circuits and circuits, special circuits namely data converters, practical switched-capacitor circuits which will enhance their employability and skill development
75	Advanced Micro & Nano Devices	VLSI5231	Employability & Skill Development - Students will learn various leakage phenomena in advanced MOS, High K Plus Metal Gate Technology, SOI MOS device, FinFET Devices like DGMOS, Tri-gate, Hetero-Structures, CNT, Graphene Device which will enhance their employability and skill development.
76	DSP Algorithms for VLSI System Design	VLSI5232	Employability & Skill Development - Students will learn DSP Algorithm, Signal and Data Flow Graph, Pipeline and Parallel Processing, SISO, MIMO System which will enable their employability and Skill Development
77	Low Power VLSI Circuit and System	VLSI5241	Employability & Skill Development - Students will learn CMOS Dynamic Power Dissipation & Reduction Techniques, CMOS Standby (leakage) Power Dissipation & Reduction Techniques, Short Circuit Power Reduction Techniques, Embedded Memory Power Reduction Techniques, System and Architecture level Power Reduction Techniques which will enable their employability and skill development
78	Sensors	VLSI5242	Employability & Skill Development - Students will learn Physical and Chemical Sensors, Numerical modeling techniques, Sensor Fabrication Technology, MEMS materials and nano-fabrication methods which will enhance their skill development
79	Analog Electronics	AEIE2101	Employability & Skill Development - Design and analyze BJT amplifiers for small and large signal. Design and compare between different types of Oscillators to meet the specified needs with appropriate consideration. Design, analyze and understand the application of different types of multivibrators with and without IC 555. Analyze and design analog electronic circuits using discrete components with specified needs for the betterment of human living.
80	Circuit Theory and Networks	AEIE2102	Employability & Skill Development - Identify, formulate, and solve engineering problems in the area circuits and systems. Acquire skills in analyzing electrical measuring devices, analog electronic circuits, power electronic circuits. Analyze and synthesize RL, RC and RLC networks. Design an electric system, components or process to meet desired needs within realistic constraints.
81	Analog Electronics Lab	AEIE2111	Employability & Skill Development - Set up testing strategies and select proper instruments. Design different kind of electronic circuits appropriately to obtain the best possible circuits that can be applied to any electronic systems. Practice different types of wiring and instruments connections keeping in mind technical, economical, safety issues. Evaluate the use of computer based analysis tools to review the performance of electronic circuit.
82	Circuits and Networks Lab	AEIE2112	Employability & Skill Development - Apply network theorems to analyze the experimental result using hardware circuits. Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
83	Digital Electronic Circuits	AEIE2201	Employability & Skill Development - Design and implement combinational logic circuits, sequential logic circuits. Describe the nomenclature and technology in the area of memory devices: ROM, RAM, PROM, PLD etc. and different kind of ADCs and DACs. Understand the basic electronics of logic circuits and be able to use integrated circuit packages.
84	Sensors and Transducers	AEIE2202	Employability & Skill Development - Measure various industrial variables such as temperature, pressure, level, flow etc. Understand the operational conditions, range and limitations of sensors and transducers. Understand the interfacing of the sensors with the electrical circuits in measuring and controlling devices. Use the sensors in IoT based applications.
85	Electrical Measurement and Instruments	AEIE2203	Employability & Skill Development - Measurement of resistance, inductance and capacitance. Localization of cable faults and calibration of instruments. Measurement of energy by single phase induction type meter. Construction and principle of operation of Permanent Magnet Moving coil, Moving iron, Dynamometer and Electrostatic type instruments.
86	Digital Electronic Circuits Lab	AEIE2211	Employability & Skill Development - Analyze and identify different components of digital electronic circuits. Design and implement combinational logic circuits, and sequential logic circuits. Develop necessary digital logic and apply it to solve real life problems keeping in mind technical, economical, safety issues.
87	Electrical Measurement Lab	AEIE2212	Employability & Skill Development - Measure energy using Single Phase A.C. energy meter and evaluate the unknown frequency of an A.C. supply using Wien Bridge. Determine the power using Instrument Transformer and apply the knowledge about the instruments to use them more effectively
88	Dissertation Part-I	AEIE6121	Employability & Skill Development - Dissertation should be on any topic having relevance with Instrumentation, Electrical or inter-disciplinary field of engineering. Dissertation should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
89	Micro-Electromechanical System design	AEIE6131	Employability & Skill Development - Design MEMS-based diaphragm type devices analytically. Fabricate the whole MEMS system with the help of simulation software. Develop micro-fluidic system for biomedical applications. Develop skill on engineering mechanics for micro-system design.
90	VLSI Technology	AEIE6132	Employability & Skill Development - Develop models of moderately sized CMOS circuits that realize specified digital functions. Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects. Learn VLSI design methodologies - the various steps and tools, the implementation choices, and good architecture practices.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
91	Robotics Engineering	AEIE6133	Employability & Skill Development - Solve basic robotic dynamics, path planning and control problems. Model robot links and joints and integrate sensor technology and other external devices into the robot system to design multilink flexible robot.
92	Applied Soft Computing	AEIE6141	Employability & Skill Development - Design and analyze the different components of fuzzy controller appropriately to obtain the best possible fuzzy controller that can be applied to any process control systems. Acquire knowledge of different ANN terminologies to apply in solving simple ANN problems. Illustrate biological background and give idea about basics of stochastic algorithm.
93	Wireless Sensor Networks	AEIE6142	Employability & Skill Development - Acquire knowledge of MAC protocols developed for WSN. Carry out simple analysis and planning of WSN. Apply routing protocols on the developed WSN. Work on some WSN standards, platforms and tools.
94	Remote Sensing	AEIE6143	Employability & Skill Development - Develop skills to address an environmental monitoring problem by selecting an appropriate remotely sensed data set and applying the relevant image analysis and interpretation techniques. Perform basic remote sensing image interpretation including spectral ratios, histogram stretching, filtering, supervised and unsupervised classification algorithms.
95	Medical Instrumentation	AEIE6151	Employability & Skill Development - Understand the physiology of biomedical systems and different methods in the design of biomedical instruments. Learn the different methods of medical imaging systems, concepts related to the operations and analysis of biomedical instruments. Apply it in the design of different assisting therapeutic and diagnostic medical devices.
96	Advanced Digital Control	AEIE6152	Employability & Skill Development - Principles for design of Digital Control system and will gain knowledge of implementing for industrial applications. Developing algorithms for applications based various digital controllers and analysis of discrete control systems using various time and frequency domain tools. Aware of advanced understanding of adaptive and self tuning principles and applications.
97	Nonlinear Control	AEIE6153	Employability & Skill Development - Feedback control, Control problems, Stabilization via linearization, Integral control, Integral control via linearization, Gain scheduling, Feedback linearization, Input-output linearization, Full-state linearization, State feedback control, Stabilization.
98	Post-Submission Defense of Dissertation	AEIE6221	Employability & Skill Development - Represent and communicate a project work very efficiently to the audience. Interpret experimental data and note down observations competently. Respond to all types of questions from audience based on their presentation topic.
99	Dissertation (Completion)	AEIE6222	Employability & Skill Development - Manifest themselves in industrial and research ambiances by growing skills and confidence. Solve, analyze and execute technical projects in specified time frame. Develop ethical and social responsibilities by fulfilling the needs of society for betterment of life and engage themselves in life-long learning. Develop confidence for self-learning attitude for lifelong learning.
100	Comprehensive Viva-Voce	AEIE6223	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning.
101	Chemistry of Biomolecules	BIOT2101	skill development in spectroscopy, structural chemistry
102	Industrial Stoichiometry	BIOT2102	skill development in material and energy balance
103	Biochemistry	BIOT2103	skill development in analysis of biochemical pathways
104	Microbiology	BIOT2104	skill development in study of microbial life cycle and pathways
105	Thermodynamics & Kinetics	BIOT2201	skill development in kinetic mechanism of enzyme-substrate reactions
106	Transfer Operation-I	BIOT2202	skill development in transfer operations techniques
107	Molecular Biology	BIOT2203	skill development in molecular biology techniques and procedures
108	Industrial Microbiology & Enzyme Technology	BIOT2204	skill development in study of industrial enzymes and their industrial applications
109	Basic Environmental Engineering & Ecology	CHEM2001	Employability & Skill Development - It starts with basic concepts of ecology and concerns on environment. This subject discusses how the spiraling rate of population growth and the requirements of human beings have led to large-scale deforestation, depletion of the ozone layer, creation of greenhouse effect, acid rain, smog and environmental pollution. The Paper equips students to manage environment-related issues by showing how technology can be used to control these problems. Standards and control measures: Industrial, commercial and residential air quality standard, control measure (ESP, cyclone separator, bag house, catalytic converter, scrubber (ventury). Waste water treatment system, Noise pollution control. Energy audit, Green building, Green sources of energy, Concept of Green Chemistry, Green catalyst, Green solvents (replacement of VOC)
110	Mechanical Operation	CHEN2101	Employability & Skill Development - Students will be able to apply the concepts of screen analysis to select suitable screening equipment and method for a given screening operation. Students will be able to select appropriate size-reduction equipment for a given comminution operation and will be able to calculate the power requirements for the operation.
111	Energy Engineering	CHEN2103	Employability & Skill Development - Student can learn to characterized Solid, liquid and gaseous fuel. Acquire knowledge of different crude oil extraction process. Acquire knowledge on the processing of crude oil along with an estimation of various value-added products.
112	Industrial Stoichiometry	CHEN2104	Employability & Skill Development - The students will learn to apply knowledge base to identify dimensionless numbers given several correlated variables. They can acquire ability to handle elementary flow-sheeting given a specific process. they can also develop skills to identify recycle, bypass and purge points in a chemical process and perform calculations with them.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
113	Energy lab	CHEN2111	Employability & Skill Development - The students will be able to understand the importance of quality control of the properties of different fuels during manufacturing and in applications and execution of the activities for implementing concept of Quality in the Refineries and fuel dealers' premises or R&D projects including the commercial operations in any business or industry operations of diverse nature.
114	Fluid Mechanics Lab	CHEN2112	Employability & Skill Development - The objective of this course is to impart working knowledge and develop skills of the students in fluid mechanics through bridging between the theoretical concepts and working practices for attaining the competency in practical applications or for working in the industry and conducting research & development activities.
115	Mechanical Operation Lab	CHEN2113	Employability & Skill Development - The objective of this course is to provide a hands-on idea on the mechanical devices that are essential in handling the material and it's processing in different chemical engineering related downstream applications.
116	Chemical Engineering Drawing Laboratory	CHEN2114	Employability & Skill Development - The objective of the course is to provide an elaborated concept of engineering drawing and idea on the relevant software for engineering drawing. Student can learn to use AutoCAD software for developing engineering drawing layouts and can prepare a virtual 3-D representation of an engineering equipment.
117	Process Heat Transfer	CHEN2201	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes.
118	Chemical Engineering Thermodynamics	CHEN2203	Employability & Skill Development - student can understand the process involving liquefaction, refrigeration and different power cycles. They can calculate thermodynamic efficiency of a process. They can also estimate thermodynamic properties of substances in gas or liquid state of ideal and real solution.
119	Heat Transfer lab	CHEN2211	Employability & Skill Development - The objective of this course is to provide the practical exposure to the students regarding the application of various heat transfer phenomenon and correlations in various engineering processes. Hands on experience will enable them to analyze working principles of various heat transfer devices including heat exchangers, condensers.
120	Surveying	CIVL2101	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
121	Strength of Materials	CIVL2102	Employability: Learn the fundamental tools and concepts involving mechanics to analyse and design structures. Forms the basic foundation in order to successfully learn the advanced structural engineering subjects.
122	Building Materials and Construction	CIVL2103	Employability: To assess the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates.
123	Engineering Geology	CIVL2104	Employability: To study and identify different types of rock and mineral on the basis of their physical and mechanical properties.
124	Strength of Materials Lab	CIVL2111	Employability: Apply the concepts derived from various experiments conducted to determine the various properties of metals at industrial site.
125	Engineering Geology Lab	CIVL2112	Employability: To understand the role of geology in the design and construction process of underground openings in rock. To apply geologic concepts and approaches on rock engineering projects. To identify and classify rock using basic geologic classification systems.
126	Building Planning and Drawing	CIVL2121	Employability: To study various aspects of engineering drawing like plan, elevation, section and apply them in them in the respective field work
127	CAD Lab	CIVL2122	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
128	Analysis of Structures I	CIVL2201	Employability: To assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
129	Soil Mechanics I	CIVL2202	Employability: To study the physical and mechanical properties of soil and to apply the knowledge for the solution of practical engineering problems.
130	Concrete Technology	CIVL2203	Employability: To learn various types and properties of cement, concrete and its widespread application.
131	Fluid Mechanics	CIVL2204	Employability: To learn fundamental concepts of fluid mechanics and apply the, in irrigation and water resource engineering
132	Fluid Mechanics Lab	CIVL2211	Employability: Understand the behaviour of fluid in various conditions using various experimental setups.
133	Surveying Practice	CIVL2212	Employability: The objective of surveying laboratory is to make student familiar and competent enough to draw map in suitable scale by using different surveying instruments like total station, theodolite, auto level, global positioning system (GPS), geographical information system (GIS), electromagnetic distance measurement (EDM).
134	Quantity Survey, Specification and Valuation	CIVL2221	Employability: Estimate the complete cost involved in the total planning, execution and construction of any project work. Extremely useful subject in respect to practical civil engineering is concerned.
135	Seminar I	CIVL2222	Entrepreneurship To express and present some technical matter in a lucid manner in front of the listeners who are technically sound and as well as not sound.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
136	Data Structure and Basic Algorithms	CSEN2001	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real life problem which helps in employability. Learn about the data structures/ methods/ algorithms mentioned in the course with a comparative perspective so as to make use of the most appropriate data structure/method/algorithm in a program to enhance the efficiency (i.e. reduce the running time) or for better memory utilization, based on the priority of the implementation.
137	Data Structure and Basic Algorithms Lab	CSEN2011	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real time problem which helps in employability. Implementation of array operations. linked lists, stacks & queues using linked lists. Application of sorting and searching algorithms, Polynomial addition, Polynomial multiplication, Sparse Matrices, . Recursive and Nonrecursive traversal of Trees, Threaded binary tree traversal, DFS and BFS.
138	Data Structures & Algorithms	CSEN2101	Employability & Skill Development - Teaches the basics of Data Structure and also a few concepts of algorithms. For all the new-age companies that need a programmer to code new algorithms for them, this is a must course.
139	Discrete Mathematics	CSEN2102	Employability & Skill Development - The portion that deals with Number Theory introduces to the students for the first time what they ultimately use in a group/company working Cryptography or Data Security. Also the other things that are taught like Logic is essential for anybody working in the industry, whatever be the domain.
140	Object Oriented Programming	CSEN2103	Employability & Skill Development - It teaches a student the basics of OOP and to some extent gives the concept of OOD. It introduces both C++ and Java that is basically the main tool to make student survive in the market.
141	Data Structures & Algorithms Lab	CSEN2111	Employability & Skill Development - This reinforces the knowledge of the Data Structure with an hands-on experience to boost the confidence of the students.
142	Software Tools	CSEN2112	Employability & Skill Development - This is a course that can be rarely found in a typical CSE curriculum. It teaches the things that we typically use in the organizations that do serious software development like Makefile, purify, purecov, codecov etc. That how to write correct code and optimize the same. This course single-handedly differentiates our graduates from the computing departments of other schools.
143	Object Oriented Programming Lab	CSEN2113	Employability & Skill Development - It gives the hands-on training to code in OOPs, without which it is difficult to get a programming job anywhere in the world.
144	Design & Analysis of Algorithms	CSEN2201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
145	Computer Organization	CSEN2203	Employability & Skill Development - This gives the basic idea how a computer works and also. Not only it is a requirement for those who work in hardware but also the Software Engineers need it as it teaches the principles based on which a computer can be used efficiently.
146	Data Structure and Database Concept	CSEN2206	Employability & Skill Development - Students can demonstrate an understanding of normalization theory and apply it to the normalization of a database. They will understand the concept of transactions and concurrency in database management and formulate solutions to a broad range of query problems using relational algebra and SQL.
147	Algorithm Implementation Lab	CSEN2211	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
148	DBMS lab	CSEN2216	Employability & Skill Development - Student can apply DML component of Structured query language (SQL) for storing and modification of data in Oracle RDBMS system. they can apply DQL component of Structured query language (SQL) to construct complex queries for efficient retrieval of data from existing database as per the user requirement specifications. It is also possible to conceptualize and apply various P/L SQL concepts like cursor, trigger in creating database programs.
149	Software Engineering	CSEN6101	Employability & Skill Development - Any software engineer working in development project or maintenance project will need this advanced knowledge.
150	Thesis(Progress) and Seminar	CSEN6195	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to their working topic within the specified time, such a requirement arises very often in the industry.
151	Thesis(Final)	CSEN6295	Employability & Skill Development - It helps the students to write a proper technical documentation or manual on their work, which is very much required when they join a company. Most importantly they learn how to do research on a new topic on his own albeit with some guidance from his mentor. Those who go for higher studies get immensely benefitted from such an experience.
152	Thesis Viva-voce	CSEN6296	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present a technical topic logically, such a requirement arises very often in the industry.
153	Digital Electronics	ECEN2002	Employability & Skill Development - Design of Combinational circuits, registers and Counters, different types of A/D and D/A conversion techniques. the concept of Flip flops to analyze different memory systems will develop skill
154	Digital electronics Laboratory	ECEN2012	Employability & Skill Development - Realization of Combinational circuits, Counters, multiplexers will develop skill



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
155	Analog Circuits	ECEN2101	Employability & Skill Development - Understanding the concepts of electronic ckt operations, designing different types of oscillators and high gain amplifier ckt will enhance employability & develop skills.
156	Data Structure	ECEN2102	Employability & Skill Development - Development of an efficient program based on some algorithm will develop skill.
157	Signals and Systems	ECEN2103	Employability & Skill Development - Understanding how to categorize and identify the different types of signals and systems, analyzing the frequency domain characteristics of signals using mathematical tools, implementing and extending the concepts of transformation tools to design of communication systems and filters will enhance employability & develop skills.
158	Digital Logic	ECEN2104	Employability & Skill Development - Anybody joining the EDA industry or the semiconductor industry at large needs this course as a must.
159	Circuit Theory and Filters	ECEN2105	Employability & Skill Development - Understanding and analysing complex electrical circuits and applying mathematical tool to solve various network behaviour will enhance employability & develop skills.
160	Analog Circuits Laboratory	ECEN2111	Employability & Skill Development - Designing different electronic circuits and measuring circuit parameters will develop skill.
161	Data Structure Laboratory	ECEN2112	Employability & Skill Development - Learning to analyze run-time execution of sorting methods , implementing any ADT using both array based and linked-list based data structures, designing advance data structure using Non-Linear data structure and finding appropriate data structures as applied to specified problem definition will enhance employability & develop skills.
162	Signals and Systems Laboratory	ECEN2113	Employability & Skill Development - Learning signal synthesis using SA ,understanding signal operations and measuring filter responses will develop skill.
163	Digital Logic Lab	ECEN2114	Employability & Skill Development - Hands on experience that helps very much in the Electronic Design Automation (EDA) industry
164	Circuit and Network Theory Laboratory	ECEN2152	Employability & Skill Development - Obtaining the ability to apply MATLAB/OCTAVE for circuit analysis, analyzing two port network and designing different circuits will develop skill.
165	EM Theory & Transmission Lines	ECEN2201	Employability & Skill Development - Understanding of Electromagnetic wave propagation, different electromagnetic phenomena , design of Impedance Matching Networks for two wire Transmission Lines, analysis of the radiation characteristics of antenna configurations will increase the employability & develop skills
166	Analog Communication	ECEN2203	Employability & Skill Development - Knowledge of Modulation, time and frequency domain representations of signal, analysis of various multiplexing techniques and radio receivers will develop skill.
167	Solid State Devices	ECEN2204	Employability & Skill Development - Understanding of operations of solid state devices using relative position of Fermi energy levels across p-n junctions in devices, concepts of different hetero junctions in semiconductor devices will enhance skill.
168	EM Theory Laboratory	ECEN2211	Employability & Skill Development - study on radiation patterns of various types of antenna, SW pattern under different conditions will increase the employability & develop skills
169	Analog Communication Laboratory	ECEN2213	Employability & Skill Development - Hands on experience in design of modulators & demodulators, measurement of Radio receiver parameters will develop skill.
170	Photonics & Optical Communication	ECEN5201	Employability & Skill Development - Students will know about the different modes, devices, detectors, amplifiers using optical fiber communication. They will have knowledge about various types of systems with their strengths and weaknesses. The students will know about different types of optical networks. They will understand the requirements of repeaters and amplifiers and their parameters. The students will be able to choose type of fiber for typical applications. They will be able to integrate the fiber optics with other networks. Such knowledge will help them in getting placed in Communication industry.
171	Error Control and Coding	ECEN5202	Employability & Skill Development - The students will understand the importance of channel coding in data communication. They will learn about different techniques and will apply the correct one in a situation. They will be able to analyse the efficacy of different methods. This will enhance their employability.
172	Mobile Communication	ECEN5203	Employability & Skill Development - The students will understand the challenges of wireless and mobile communication. They will be able to analyse the factors like fading, SNR. The students should be able to explain the working of a cellular system- both GSM and CDMA. They will be able to analyse performance of cellular and other wireless networks enhancing their employability in communication industry and allied services
173	Communication systems Laboratory	ECEN5211	Employability & Skill Development - The students will be able to correlate different theories of wireless communication and fiber optics with practical experiments. They will understand operations of repeater station, GPS and GSM cellular systems. They will learn the procedures for testing radio parameters. Students will learn working of fiber optic links. Such knowledge will enhance their employability in Communication Industry.
174	Cryptography & network security	ECEN5231	Employability & Skill Development - Students will know about the basics and different standards used. They will have knowledge about important cryptography techniques. The students will know about algorithms applied for encryption. They will acquire knowledge about security challenges and some concepts in web security. The students will understand security systems using VPN and Firewalls. They will be able to develop new algorithms. Such skill sets will enhance their employability in all the IT companys.
175	Artificial intelligence & soft Computing	ECEN5232	Employability & Skill Development - They will have initial exposure to AI and its power. Processing of images and their application in various fields are taught so that they can apply in the relevant domains. Such skill sets will enhance their employability in all the IT companys.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
176	Integrated Circuits & Design	ECEN5233	Employability & Skill Development - The designing of chips is a hot topic. The students will learn and understand the devices, their characteristics. Then they will apply the knowledge to design Ics with different features. Such skill sets will enhance their employability in Rf Industry
177	Microwave measurement and Instrumentation	ECEN5234	Employability & Skill Development - Students will be able to analyse instruments like spectrum analyzer, Vector Network analyzer etc. They will be able to measure microwave power. They will acquire an Idea about techniques to measure power. They will develop the capability to analyse problem in measurement procedure. Such skill sets will enhance their employability in Rf Industry
178	Satellite communication	ECEN5241	Employability & Skill Development - Students will know about the orbits and different modules of a satellite. They will have knowledge about satellite links and various factors affecting the QOS of the links. The students will be able to explain the differences between TDMA, FDMA, DAMA etc. access techniques. They will be able to explain VSAT. GPS. The students will be able to analyse causes of interference and solution. They will understand GPS working. Such knowledge leads to enhancement in employability.
179	Image processing & pattern Recognition	ECEN5242	Employability & Skill Development - Students will know about the basics of image processing, spatial filtering etc. They will have knowledge about techniques applied for pattern recognition. The students will know about image clustering and face recognition. They will be able to classify and predict. The students will acquire knowledge about identifying objects correctly. They will earn the potential to develop new applications which facilitates entrepreneurship and supports the concept of self reliant nation
180	Multimedia communication	ECEN5243	Employability & Skill Development - Students will know about the different media classification, media characteristics. They will have knowledge about various types of compression coding and memory systems. The students will know about different architectures used and media modeling. They will learn about management of resources and project management. The students will be able to analyse synchronization problems. They will be producing films with confidence which indicates direct relation to employability
181	Advanced Antenna Engineering	ECEN5244	Employability & Skill Development - Students will come to know about Antenna – Radiation, VSWR, aperture and their importance, Types of antennae and antenna arrays including microstrip antenna, Testing principles of antennae, EMI and EMC and associated hazards, Different propagation phenomena and QoS of radio links and their analysis which in turn will enhance their Employability.
182	EMI/EMC	ECEN6131	Employability & Skill Development - Students will be able to Identify sources of EMI and understand coupling of electromagnetic signals leading to interference. They will be able to develop an ability to design EMI mitigation techniques. Students will be able to demonstrate EMI test method and its capabilities. Further they will be able to identify EMC requirements for electronic systems and understand EMC standards and its application. As such their chances of employability will increase.
183	Ad-hoc and Sensor Networking	ECEN6132	Employability & Skill Development - Students will be able to analyze a situation and interpret a data in ad hoc networks. Students will acquire knowledge to learn and apply modeling based approach through the extensive use of simulator tools. Students will be able to understand and develop ability to participate in research work. They will be able to apply suitable algorithm for a route. The students will understand the security requirements for networks enhancing employability of students.
184	Cognitive Radio Technology	ECEN6141	Employability & Skill Development - Students will develop an ability to analyze a performance in a radio net. They will develop an ability to learn and apply modular approach in design. They will Develop a passion to pursue next generation wireless communication. They will be able apply correct technique in locating radios in networks. This knowledge will help them in skill development for Communication Industry.
185	Design of Communication equipments and Systems	ECEN6142	Employability & Skill Development - Students will be able to apply knowledge in designing electronics for communication engineering. They will have the ability to learn and apply modelling based approach through the extensive use of simulation tools. They will be able to design of complex PCBs with Clear perception about testing of parameters. Consequently, they will be able to have their own start up supporting national vision of self reliant India.
186	Analog & Digital Electronic circuits	ELEC2101	Skill development / Entrepreneurship- Design and analyze Electronic circuits to meet the specified needs with appropriate consideration. Design and analyze various sequential circuits like synchronous and asynchronous counters, shift registers using flip flops. Entrepreneurship for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools
187	Circuit Theory	ELEC2102	Skill development in electrical technology by Imparting basic knowledge of electrical quantities such as current, voltage, power, energy and frequency to understand the impact of technology in a global and societal context. Identify, formulate, and solve engineering problems in the area circuits and systems, solve electrical circuits having both dependent and independent sources, analyze magnetically coupled circuits, use Laplace transform technique in solving electrical circuits. Design, analyze and synthesize filters.
188	Field Theory	ELEC2103	Skill development in electric field calculation, magnetic field calculation and propagation of electromagnetic wave through different medium
189	Analog & Digital Electronic circuit Lab	ELEC2111	Skill development for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
190	Circuit Theory Lab	ELEC2112	Skill development in electrical engineering by acquainting the basic concepts and properties of electrical circuits.Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
191	Electric Machine-I	ELEC2201	Skill development on- Study of various operations of DC machines and Transformers
192	Electrical & Electronic Measurement	ELEC2202	Skill development in the field of measuring instruments (PMMC,MI & ED). Choose appropriate bridge for measurement of resistance, capacitance and inductance. acquire knowledge about various electronic and digital instruments like average reading AC voltmeters, peak reading AC voltmeters, true RMS voltmeter, electronic multi-meter, digital voltmeters.
193	Thermal Power Engineering	ELEC2203	Skill development in thermal power engineering. Acquiring knowledge about basic Concepts of thermodynamics, understanding the application of first and second law of thermodynamics, understanding the basics of thermal power generation and calculate the efficiencies of Rankine cycles with reheat and regeneration, acquiring knowledge of various types of boilers, turbines used in thermal power plants provides employability.
194	Electrical Machine-I Lab.	ELEC2211	Employability/Entrepreneurship on various testing of DC machines and Transformer
195	Electrical & Electronic Measurement Lab.	ELEC2212	Skill development for measuring electrical parameters in efficient ways.
196	Thermal power Engineering Lab	ELEC2213	Employability & Skill Development - Thermal power engineering knowledge provides Employability
197	Human Values & Professional Ethics	HMTS2001	Employability & Skill Development - It helps a student to perform in an ethical matter which is obligatory for holding a position in the industry in the long run. Learn to apply ethical theories in the decision making process and follow the ethical code of conduct as formulated by institutions and organizations. Develop strategies to implement the principles of sustainable model of development.
198	Indian Culture and Heritage	HMTS2002	Employability & Skill Development - Learn about Ancient Indian Science & Technology with subtopics of Mathematics, Astronomy, Medicine and Architecture Technology. This course enables students to factor in human values and professional ethics in all of their activities in professional life. Students also apply their knowledge about variation of Indian culture & heritage.
199	Language Practice Lab (Level 2)	HMTS2011	Employability & Skill Development - It helps in all jobs as it enhance the language skills to communicate effectively. Develop different skills like Formal verbal communication, Presentation skills, Group Discussion, Job Application and Personal Interview.
200	Research Methodology and Project Management	HMTS6101	Employability & Skill Development - Students will be able to Understand research problem formulation. They will be able to analyze research related information, understand the ultimate importance of ideas, concept and creativity. they will also understand Importance of IPR for individuals and nations. Such knowledge definitely enhances skill development for research which is in alignment with Make in India concept.
201	Digital Electronics	INFO2101	Employability & Skill Development - Analyse and design of digital circuits to use them in IOT applications which helps in employability.
202	Computer Organization	INFO2102	Employability & Skill Development - Gain knowledge in internal working, structure and implementation of a computer system.
203	Digital Electronics & Computer Organization Laboratory	INFO2112	Employability & Skill Development - Acquired skill to simulate,synthesis and testing of digital circuits which helps in employability.
204	Switching Theory & Automata	INFO2201	Employability & Skill Development - Gain Knowledge in checking syntax,testing automation and natural language processing which helps in Employability.
205	Design & Analysis of Algorithms	INFO2202	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which create employability.
206	Information Theory & Coding	INFO2203	Employability & Skill Development - Attain the knowledge of information theory and direct applications of it over various real life problem.
207	Object Oriented Programming	INFO2204	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
208	Design & Analysis of Algorithms Laboratory	INFO2212	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which helps in employability.
209	Object Oriented Programming Laboratory	INFO2214	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
210	Mathematical Methods	MATH2001	Employability for improvement of mathematical skills. Develop computational Synthesize components of a physical phenomenon and consequently construct a mathematical model of the system. Apply suitable analytic methods to solve wave equations, heat conduction equation.standing of second order differential equations with analytic coefficients along with Bessel and Legendre differential equations with their corresponding recurrence relations. Master how partial differentials equations can serve as models for physical processes such as vibrations, heat transfer etc.
211	Numerical and Statistical Methods	MATH2002	Employability & Skill Development - Analyzing certain algorithms, numerical techniques and iterative methods that are used for solving system of linear equations, implementing appropriate numerical methods for solving advanced engineering problems , applying the knowledge of matrices for reducing problems involving Science and Engineering, developing an understanding to reduce a matrix to its constituent parts in order to make certain subsequent calculations simpler and applying various optimization methods for solving realistic engineering problems will enhance skill.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
212	Numerical and Statistical Methods Lab	MATH2012	Employability & Skill Development - Solve problems based on Numerical Methods. Develop algorithms to handle large systems of equations appearing in physical and engineering problems. knowledge of C programming to find non-iterative exact solutions of a system of equations, ability of C programming to solve problems involving interpolation, implementation of algorithms in optimization problems will enhance skill
213	Probability & Numerical Methods	MATH2202	Employability & Skill Development - This is a must course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
214	Numerical Methods & Programming Lab	MATH2212	Employability & Skill Development - It gives a chance to the students to implement the numerical techniques that they learn in the corresponding theory paper. It helps them with any job that requires the skill of precision programming in Scientific Computing like the ones used in space science or missile technologies.
215	Applied Thermodynamics	MECH2101	Employability & Skill Development - This is a conceptual subject and the knowledge on this can be applied in various industrial as well as research field. <u>Students directly apply the knowledge in different thermal equipment.</u>
216	Strength of Materials	MECH2102	Employability & Skill Development - Fundamentals of Mechanics of Materials by studying the deformed behavior of structures (bar, beam, column) under various loading (axial, torsional, bending or combination of them) and boundary (statically determinate & indeterminate) conditions are introduced in this subject. Students will be able to apply the knowledge to analyse, select suitable material and calculate & predict stresses and deformations to a problem at hand and be a part of RnD team of a research institute or company.
217	Fluid Mechanics	MECH2103	Employability & Skill Development - The fundamentals of Fluid Mechanics including Fluid Statics and Fluid Dynamics are introduced through this subject. Students will be able to apply various fundamental relationships of Fluid Mechanics to analyse various system such as piping network having losses, pipe bends etc.
218	Engineering Materials	MECH2104	Employability & Skill Development - Detail knowledge of engineering materials and smart newly developed materials with their properties and application can be gathered and that can be applied in mining and manufacturing industry.
219	Metrology & Measurement	MECH2105	Employability & Skill Development - Students learn various techniques of measurement of dimensions, tolerances, surface finish, temperature, pressure, strain, stress etc and the instruments associated with such measurements. This is a vital skill in any manufacturing industry.
220	Machine Drawing – I	MECH2111	Employability & Skill Development - Basic concepts of Sketching, Editing, Modifying & Drafting tools of AutoCAD software are introduced and applied for Conversion (multi view to isometric & Isometric to multi-view), sectional view of solids & 2-D Assembly of part drawings along with dimensioning and conventions used. Students will be able to apply the concepts to read & drawing Assembly Drawings & Production Drawings prevalent in industry.
221	Applied Mechanics Lab	MECH2112	Employability & Skill Development - The knowledge and experiences of this lab will help students to determine different material properties (mechanical) through standard testing equipments and testing processes.
222	Workshop Practice – II	MECH2113	Employability & Skill Development - Hands on training in detailed on machining exposure (Lathe, shapping, milling, drilling etc) and manufacturing procedures (Casting, welding etc.) are helpful for direct bearing on employability.
223	Fluid Machinery	MECH2201	Employability & Skill Development - Students will be able to classify and describe different hydraulic machines, their components, functions, performance curves and use those parameters for selection of a device in practical industrial application.
224	Kinematics of Machines	MECH2202	Employability & Skill Development - Kinematic design and analysis is one of the important step in designing a mechanical machine. Students will be able to select and kinematically synthesize different mechanisms, do velocity and acceleration analysis, select and design different transmission systems, cam design for specific application.
225	Primary Manufacturing Processes	MECH2203	Employability & Skill Development - This subject enhance in basic manufacturing by fundamental technological systems, lowers error rates and product failures, overall reducing huge costs historically faced by manufacturers.
226	Machine Drawing - II	MECH2211	Employability & Skill Development - Basic Sketching, Options aiding construction, Modelling, Editing, Modifying, Dimensioning tools & features of a solid modelling CAD software (CREO Parametric) are introduced through this Lab course. The knowledge help students to develop an insight about industrial design practice of various machine components which in turn help students take part actively in product development and/or modifications in any company
227	Metrology & Measurement Lab	MECH2212	Employability & Skill Development - Students handle and learn to use very precision instruments to measure various parameters of mechanical components, This skill will help them excel in Quality Control activity in any industry specially the precision ones.
228	Manufacturing Technology Lab	MECH2213	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools like lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various components. This skill will help students to select/ design/ maintain machine tools in an industry.
229	Material Testing Lab	MECH2214	Employability & Skill Development - Students handle and learn to use different materials testing equipment to measure various mechanical properties. This knowledge can apply directly in the industry and they develop themselves as a skilled operator.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
230	Physics II	PHYS2001	Employability & Skill Development - Develop an idea of the different types of statistical distributions and be able to understand semiconductor behavior by application of statistical methods. Understand different dielectric materials, physical interpretation of magnetic properties of matter, and basic understanding of superconductivity. In all cases they must build an ability of addressing related problems and explore the applications of the different theories.
231	Physics II Lab	PHYS2011	Employability & Skill Development - Perform various experiments that will help them determine some very important material constants viz. dielectric constant, Hall coefficient, band gap of semiconductors etc., as well as some universal constants of great importance like Stefan's constant, Planck's constant etc. Develop skills of result analysis and graph plotting along with operational skills of the <u>different experimental apparatus</u> .
232	RF IC Design and MEMS Technology	VLSI6101	Employability & Skill Development - Students will learn noise and interference performance metrics like noise figure, IIP3 and different matching criteria, wireless standards and various transceiver architectures, RF receiver front end, MEMS fabrication technologies, micro-systems technology for technical feasibility which will enhance their employability and skill development
233	Digital VLSI Design Laboratory	VLSI6111	Employability & Skill Development - Students will do hands on practice on Critical Path Modeling and Analysis, Sizing in Digital Design, n CMOS Design of Combinational Circuits and Modules, CMOS Design of Sequential Circuit, Setup and Hold Check, Layout of a system, DRC, LVS, Extraction using Industry Standard Cadence Virtuoso/Assura, Back-annotation and Post Layout Timing Analysis using Industry standard Spectra Circuit Simulator which will enhance their employability and skill development.
234	Communication Techniques	AEIE3101	Employability & Skill Development - Sample analog signal properly and Differentiate among pulse modulation & demodulation techniques and signal multiplexing for engineering solutions. Describe and determine the performance of coding schemes for the reliable transmission of digital representation of signals & information over the channel. Explain the concept of frequency reuse, channel assignment strategies and make use of wireless communication tools
235	Microprocessor- Architecture and Applications	AEIE3102	Employability & Skill Development - Develop the skill in program writing for 8085A microprocessor. Describe different types of memory and I/O interfacing with 8085A microprocessor. Describe the architecture of different types of programmable peripheral devices and their interfacing with 8085A microprocessor. Develop the skill to interface different types of I/O devices with 8085A microprocessor using programmable peripheral device.
236	Industrial Instrumentation	AEIE3103	Employability & Skill Development - Design different flow measuring devices and level measuring devices with necessary accessories for industry. Demonstrate working knowledge of temperature measuring devices. Design electronic instrumentation system for the acquisition of measurement data produced by measuring instruments for flow, level, temperature and pressure. Formulates industrial process parameters towards the analysis of process data
237	Control Systems	AEIE3104	Employability & Skill Development - Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
238	Microprocessors & Microcontrollers	AEIE3105	Employability & Skill Development - This course helps to get jobs in companies <u>that work in embedded systems</u> .
239	Sensors and Transducers Lab	AEIE3111	Employability & Skill Development - Experiment with temperature measuring sensors like AD590 IC sensor, RTD and thermistor. Performance study of capacitive transducer, LVDT, Pressure and displacement sensors. Rotational speed measurement using magnetic proximity sensor, stroboscopic principle. Performance studies of some optical sensors like LDR, photo diode and photo transistor. Design a suitable signal conditioning circuit for a given sensor.
240	Microprocessor Lab	AEIE3112	Employability & Skill Development - Design the interfacing of input/output devices with 8085 microprocessor using partial and absolute address decoding. Build assembly language program to control input/output devices for various applications. Analyze the processing of analog signal and generation of various analog signals using interfacing circuit. Realize the programming concept of <u>hardware interrupts in 8085 microprocessor</u> .
241	Industrial Instrumentation Lab	AEIE3113	Employability & Skill Development - Demonstrate the calibration process of pressure measuring devices using dead weight taster. Measure process parameters like flow, level, temperature, pressure, moisture and viscosity using different <u>industrial instruments</u> .
242	Control Engineering Lab	AEIE3114	Employability & Skill Development - Control the speed of dc motor using different controllers. Investigate the time response of systems. Analyze frequency response <u>and stability of linear systems using different methods</u> .
243	Microprocessors & Microcontrollers	AEIE3115	Employability & Skill Development - It gives the chance to work with actual microprocessors and microcontrollers, to program them for small projects that in turn helps to get jobs in companies that build small pieces of stand-alone or embedded systems with a microprocessor and/or a microcontroller in it.
244	Process Control	AEIE3201	Employability & Skill Development - Develop the mathematical model for the liquid, thermal and gas systems. Design and simulate the ON-OFF, P, PI, PID etc. controllers both in hardware and software using electronic components, simulink, MatLab, LabVIEW etc. and also knowledge of control valve. Design and develop the ladder logic program in PLC towards the solution of the sequential events <u>performed in industry</u> .

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
245	Electronic Instrumentation and Measurements	AEIE3202	Employability & Skill Development - Use electronic instruments like VCO, PLL, current mirror, charge amplifier, voltage to frequency and frequency to voltage converter. Explain the circuit operation of CRO, dual trace oscilloscope, delayed time base oscilloscope. Familiar about digital storage oscilloscope, spectrum analyzer. Explain the working of different types of digital voltmeters, digital frequency meter and digital display unit. Check the quality of a coil, capacitor using Q meter
246	Advanced Microprocessors and Microcontrollers	AEIE3203	Employability & Skill Development - Develop the skill in program writing for 8086 microprocessor, 8051 and PIC microcontroller. Understand and realize the interfacing of memory, input/output devices with 8086, the interrupts of 8086 microprocessor, 8051 and PIC microcontroller and the use of timer/counter and serial data communication process in 8051 microcontroller. Apply the knowledge to interface different type of I/O devices with 8051 and PIC microcontroller.
247	Process Control Lab	AEIE3211	Employability & Skill Development - Develop skill to draw and explain P&I diagram of flow, pressure, level and temperature control loop. Apply software tool to study the close loop process responses. Create ladder logic diagram for various sequential operations commonly used in industrial environment. Provide engineering solutions of various societal, professional & environmental responsibilities
248	Electronic Instrumentation and Measurement Lab	AEIE3212	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Able to make statistical analysis on large number of data. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
249	Advanced Microprocessors and Microcontrollers Lab	AEIE3213	Employability & Skill Development - Develop 8051/ PIC 16F or 18F series microcontroller based systems to implement various tasks. Design the interfacing of display devices (LED/LCD) with microcontroller. Build program to control input/output devices like motor (stepper motor/servo motor), temperature sensor, key board, etc., with microcontrollers for various applications. Build program using microcontroller to generate different waveforms and perform pulse width modulation of a voltage signal. Design and implement an embedded system using 8051/ PIC 16F or 18F series microcontrollers.
250	Technical Seminar I	AEIE3221	Employability & Skill Development - Build up knowledge in the field engineering, with specialization related to Electronics and Instrumentation engineering and the ability to integrate information across disciplines. Prepare quality presentation on a topic with proper organization and demonstrate the content properly with the aid of audio-video, pictures and documents, etc. Communicate effectively by making an oral presentation before an evaluation committee. Interact efficiently with audience.
251	Fundamentals of Digital Signal Processing	AEIE3231	Employability & Skill Development - Perform mathematical operations on discrete time signals. Design algorithms of digital FIR and IIR filters according to the given specification and realize structure of a digital filter for given transfer function.
252	Mobile Communication	AEIE3232	Employability & Skill Development - Learn cellular concept and the strategies associated with cellular communication. Evaluate GSM and CDMA technologies with their architecture, frame structure, system capacity as well as services provided by them. Design wireless local area networks utilizing the wireless access protocols and determine the merits and limitations of 3G technology.
253	Opto Electronics and Fibre Optics	AEIE3233	Employability & Skill Development - Learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. Learn the various optical source materials, LED structures, quantum efficiency, Laser diodes, fiber optical receivers such as PIN APD diodes. Specify and analyze optical optoelectronic devices in optical fiber communication. Gain the basic concepts of optoelectronics, properties and industrial applications.
254	Biomedical Instrumentation	AEIE3241	Employability & Skill Development - Different sensors used to measure process variables with that of cardiac variables like- blood flow rate, blood pressure, heart sound, cardiac outputs etc.Design of cardiac pacemaker, Defibrillator or other therapeutic instruments. Understand the various method of medical imaging systems like-MRI, X-Rays, Ultrasounds along with the concept of bio-telemetry.
255	Advanced Sensors	AEIE3242	Employability & Skill Development - Acquaint the fundamentals of sensing materials, properties and industrial applications and understand microfabrication techniques. Explain the need for smart sensors and choice of materials in microfabrication techniques.
256	Non Conventional Energy Sources	AEIE3243	Employability & Skill Development - Estimate the scope of wind energy for electricity generation and explain the process to harness energy from nonconventional energy sources like geothermal, tidal, ocean-thermal and wave. Evaluate the economical use of renewable energy resources compared to conventional energy sources.
257	Genetics	BIOT3101	skill development in genetic disorders, genetic counseling
258	Bioinformatics	BIOT3102	skill development in genomics, databases, programming and structure prediction
259	Recombinant DNA Technology	BIOT3103	skill development in DNA cloning, restriction enzymes and DNA editing
260	Transfer Operation-II	BIOT3104	skill development in advanced transfer operations techniques
261	Immunology	BIOT3201	skill development in immunological techniques, immune disorders
262	Plant Biotechnology	BIOT3202	increases employment opportunity in plant tissue culture sector
263	Bioreactor Design and Analysis	BIOT3203	skill development in bioreactor types, mode of action
264	Molecular Modeling & Drug Designing	BIOT3241	increases employment opportunity in drug designing and pharmaceutical industry
265	Biophysics of Macromolecules	BIOT3242	skill development in biophysical techniques
266	Biosensors and Diagnostics	BIOT3243	increases employment opportunity in biosensor and bioinstrumentation industry
267	Biofertilizers and Biopesticides	BIOT3244	increases employment opportunity in biopesticides and biofertilizer sector

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
268	Chemical Reaction Engineering	CHEN3102	Employability & Skill Development - Student will be able to differentiate and analyze between ideal and non ideal reactors using suitable model equations and to utilize the design strategies of non ideal reactors. They can also apply the concepts of RTD as a tool for designing and scale up industrial reactors.
269	Separation Process - II	CHEN3103	Employability & Skill Development - Students will be able to design various process equipment pertaining to separation process like Cooling Tower, Extractor, Dryer. Students will be able to classify different membrane separation and will be able to evaluate the merits of the process.
270	Numerical Methods of Analysis	CHEN3104	Employability & Skill Development - Student will learn to mathematically model using linear algebra, students will be able to relate the dependent and independent variables to define the final equation. Students will be able to identify the broad category of numerical method to solve the corresponding mathematical problem. It will be also possible to model an engineering process using partial differential equations (PDE), students will be able to identify the type of PDE and its associated boundary conditions. Students will develop the numerical form of the governing equation by applying principles of numerical differentiation.
271	Mass Transfer laboratory	CHEN3111	Employability & Skill Development - The objective of the course is to provide an overview of different mass transfer operation relevant to process industry. They can learn to operate Distillation column, Drying Unit, Absorption Column etc.
272	PEDD- I	CHEN3112	Employability & Skill Development - Student can learn to design and Drawing Pressure Vessel - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw industrial scale Reactor.
273	Chemical Reaction Engineering Laboratory	CHEN3113	Employability & Skill Development - Student will learn to operate different type of chemical reactor that are used in industry. They can also learn to analyze the performance of a real reactor by generating its RTD profile.
274	Polymer Science & Engineering	CHEN3131	Employability & Skill Development - The students will be exposed to the knowledge of developing biodegradable and biocompatible polymers for maintaining ecology of the soil. They can learn various types of polymer composites to develop new materials. The students will be knowledgeable in identifying and controlling the use of hazardous behaviour of plastics in the industrial applications and social applications, particularly health issues.
275	Petrochemical Technology	CHEN3132	Employability & Skill Development - Students will learn the design and operation of petrochemical complexes. Students will familiar with major polymerization processes on industrial scale.
276	Material Science & Engineering	CHEN3133	Employability & Skill Development - The students will acquire adequate understanding about the phase diagram of different valuable and commonly used alloys and materials in engineering and do necessary modifications in the composition of the materials like pure metals, alloys like steel, brass etc, polymeric materials, ceramic and composites like FRP, RC casting, Plywood boards, high performance cutting tools, Cermets etc. The students will be knowledgeable in eliminating or introducing structural defects or foreign elements in the original crystal lattice of the materials like preparation of innovative alloys, p & n - type semiconductors, piezoelectric materials etc so as to tailor the properties of the materials according to requirement.
277	Process Dynamics, Instrumentation and Control	CHEN3201	Employability & Skill Development - Student can explain the basic principles & importance of process control in industrial process plants. They can specify the required instrumentation and final elements to ensure that well-tuned control is achieved and can explain the use of block diagrams & the mathematical basis for the design of control systems.
278	Project Engineering	CHEN3202	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
279	PEDD- II	CHEN3211	Employability & Skill Development - Student can learn to design and Drawing of Heat Exchangers - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw various flow measuring devices such as venturimeter, orificemeter, pitot tube etc.
280	Numerical Methods Laboratory	CHEN3212	Employability & Skill Development - The course illustrates the basics of MATLAB or equivalent software programming. Student can develop the logic for the chosen numerical method and can write MATLAB code. They learn to compile the final outcome of the given problem with expected result either in numeric or in graphical representation.
281	Seminar I	CHEN3221	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner.
282	Nano Technology	CHEN3231	Employability & Skill Development - Student can classify the various types of process used in nano-manufacturing of 1D, 2D and 3D nanostructures. They can identify the processes necessary to build a particular nano structure and can exhibit knowledge of the relevant physical, chemical, mechanical, electrical and optical properties of materials in nano configuration. Students decide on measurements and instruments used for characterizing a nanomaterial.
283	Bioprocess Engineering	CHEN3233	Employability & Skill Development - students can design bioreactors for free enzymatic reaction under enzyme uninhibited/inhibited conditions. They can use principles of bioprocess engineering for selecting and designing suitable contacting device for immobilized enzyme reactions under mass transfer/bioreaction control condition.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
284	Analysis of Structures II	CIVL3101	Employability: To assess the advanced methods of calculating force that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
285	Soil Mechanics II	CIVL3102	Employability: To analyze the stability of retaining walls, slopes and to determine the bearing capacity and settlement of shallow foundation.
286	Highway & Traffic Engineering	CIVL3103	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
287	Environmental Engineering	CIVL3104	Employability: To assess various characteristics of water, waste water and there removal techniques, various treatment units and their designs
288	Design of R.C.C. Structures	CIVL3105	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structural elements.
289	Soil Mechanics Lab I	CIVL3111	Employability: To visually identify different types of soil and to determine soil properties.
290	Concrete Technology Lab	CIVL3112	Employability: To test the basic properties of the ingredients of concrete, fresh and hardened concrete properties.
291	Environmental Engineering Lab	CIVL3113	Employability: To determine experimentally the various properties of water as well as waste water.
292	R. C. C. Design & Detailing	CIVL3121	Employability: Able to analyse and design reinforced concrete building for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing and produce design calculations and drawing in appropriate professional format
293	Design of Steel Structures	CIVL3201	Employability: Able to analyse and design steel structures for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
294	Foundation Engineering	CIVL3202	Employability: To analyze pile foundation and sheet pile structures on the basis of sub-soil exploration results and to assess different types of ground improvement techniques.
295	Prestressed Concrete	CIVL3203	Employability: To learn the concepts of analysis and design methods of Prestressing using high strength materials
296	Soil Mechanics Lab II	CIVL3211	Employability: To determine the consolidation and shear strength parameters of soil.
297	Transportation Engineering Lab	CIVL3212	Employability: The objective of Transportation Engineering laboratory is to determine some of the properties of coarse aggregates and bitumen.
298	Steel Structure Design & Detailing	CIVL3221	Employability: Able to analyse and design steel structures such as factory shed for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
299	Railway & Airport Engineering	CIVL3231	Employability: To have a detailed knowledge of every aspect of railway engineering like rails, sleepers, ballasts, their use and functions. To have a detailed knowledge regarding airport runway, its design and multiple parameters that are taken into consideration for construction of airport.
300	Advanced Surveying	CIVL3232	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Advanced surveying includes aerial survey, photogrammetry, etc.
301	Design of Tall Structures	CIVL3233	Employability: Learn and apply the fundamental and in-depth concepts required by a civil engineer to design tall/ high rise structures above 50 to 100 m.
302	Soil Stabilization & Ground Improvement Techniques	CIVL3234	Employability: To investigate different methods for improving the stability of the existing ground by reducing its permeability and increasing its overall strength.
303	Object Oriented Programming using C++	CSEN3004	Employability & Skill Development - Ability to develop the object oriented application using C++ and improvement of performance of solution using exception handling will enhance the employability
304	OOPs Laboratory	CSEN3014	Employability & Skill Development - Hands on experience of object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O, other standard language constructs and other features of the C++ language including use of templates, and handling exceptions improves programming skill & Employability
305	Formal Language & Automata Theory	CSEN3101	Employability & Skill Development - This is the basic course that teaches the students the underlying theory of computation - what can be computed and what not. The jobs that has the requirement of building new compiler for a new language or capture an input from the user pertaining to a specific regular expression must need this knowledge.
306	Database Management Systems	CSEN3102	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course.
307	Operating Systems	CSEN3103	Employability & Skill Development - Anybody working at the system level in the industry need this course. Also those who work the application layer also need to have a solid idea how the operating system operates at the backend in order make the implementation efficient.
308	Computer Architecture	CSEN3104	Employability & Skill Development - This course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
309	Data Structure & Algorithm	CSEN3106	Employability & Skill Development - increases employment opportunity in IT programming sector
310	Database Management Systems Lab	CSEN3112	Employability & Skill Development - This gives a hands-on chance to write queries and learn the different commands that a Database Administrator (DBA) needs to execute and hence helps jobs of becoming a DBA. Also good knowledge of this is required for groups writing a banking software or an ERP software.
311	Operating Systems Lab	CSEN3113	Employability & Skill Development - A must course for students who look for jobs as a system administrator and or developers that need system level knowledge.



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
312	Computer Architecture Lab	CSEN3114	Employability & Skill Development - This course complements the Architecture theory course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
313	Computer Networks	CSEN3201	Employability & Skill Development - Anybody working in a networking company, like a internet service provider, a mobile service provider, a company that builds networking hardware like CISCO or write networking software for other third party vendors need such a course.
314	Software Engineering	CSEN3202	Employability & Skill Development - Any softwrae engineer working in development project or maintenance project will need this knowledge.
315	Data Base Management System and Computer Networking	CSEN3205	skill development In Information Technology sector
316	Data Structure & RDBMS	CSEN3206	Employability: to understand Linear Data structures , Recursion: Design of Recursive algorithm.
317	Computer Networks Lab	CSEN3211	Employability & Skill Development - It complements the theory course in networking and helps the students to become confident with the basichardware and software required to be handled in a company that needs to manage a network.
318	Software Engineering Lab	CSEN3212	Employability & Skill Development - It complements the theory course; students learn all the practical aspects of software engineering through mini-projects that are sometimes close replicas of what they do in the industry after joining.
319	System Administration Lab	CSEN3213	Employability & Skill Development - Every software firm need at least one system administrator or a team depending on its size and this course trains up the students for that role.
320	RDBMS Lab	CSEN3216	Employability : To perform Experiments on Database on RDBMS Platform (Oracle)
321	Computer Graphics & Multimedia	CSEN3280	Employability & Skill Development - The students who are seeking jobs in graphics company that help in developing animation for films or content generation need this.
322	Artificial Intelligence	CSEN3281	Employability & Skill Development - This is must course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc.
323	Web technologies	CSEN3282	Employability & Skill Development - Anbody developing web applications for nay company, whether on the client side or server side will find this course very helpful.
324	Advanced Java Programming	CSEN3283	Employability & Skill Development - It prepares the studnets for companies that develop software in JAVA-based technologies, which is a high percentage for the last two decades.
325	Computer Graphics & Multimedia Lab	CSEN3285	Employability & Skill Development - It complements the corresponding theory course; helps student to learn developing graphics software required in animation companies.
326	Artificial Intelligence Lab	CSEN3286	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
327	Web technologies Lab	CSEN3287	Employability & Skill Development - A very helpful course for students who will join companies writing software for web applications.
328	Advanced Java Programming Lab	CSEN3288	Employability & Skill Development - It gives a hands-on experience on both client-side and server-side programming in JAVA and associated technologies.
329	Seminar I	CSEN3297	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry.
330	Microelectronics And Analog Vlsi Design	ECEN3103	Employability & Skill Development - Understanding of the IC Fabrication Process Flow leading to the practical realization of the scaled MOSFETs, Design MOS circuits of practical importance e.g., common-source amplifiers and differential amplifiers will enrich employability & develop skills.
331	Digital Communication	ECEN3105	Employability & Skill Development - Application of mathematical concepts to analyze the source coder and channel coder blocks of the digital communication system, analysis of error performance of a baseband receiver in digital communication system, understanding of various digital modulation, demodulation techniques and concept of OFDM and Spread Spectrum Modulation system will enhance employability & develon skills.
332	Microelectronics And Analog Vlsi Design Lab	ECEN3113	Employability & Skill Development - Experiments on the basic principle of operation of NMOS and PMOS,VLSI sub-circuits etc will enhance employability & develop skills.
333	Microprocessors, Microcontrollers & Systems Laboratory	ECEN3114	Employability & Skill Development - The concepts of CPU, timing and control signals I/O devices, and various BUS structure, knowledge about interrupts, stack and subroutine , concept the architecture of 8086 family & ARM basics understanding of interfacing of processor with memory and I/O devices and analysis of microcontroller 8051 architecture will increase the employability & develon skills
334	Digital Communication Laboratory	ECEN3115	Employability & Skill Development - Hands-on experiments on Implementation and study Line codes, Analysis and comparison of time domain and frequency domain representation of various digital modulation and demodulation schemes will increase employability & develop skills.
335	Digital Vlsi Design	ECEN3201	Employability & Skill Development - Industry Requirement level learning on VLSI Design Cycle, Style and Methodology , ability to construct Physical Layout Design and Stick Diagram of Digital Gates ,ability to interpret Si Testing and Debug related algorithms and Fault Modeling will enhance the Employability and develop skill.
336	Digital Signal Processing & Applications	ECEN3202	Employability & Skill Development - The concept of z-transformation, convolution, knowledge of discrete-time Fourier transform to interpret DFT, FFT and design of transfer functions of IIR/FIR filters will enhance employability & develon skills.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
337	Digital Vlsi Design Laboratory	ECEN3211	Employability & Skill Development - Backend Design using Industry Standard Mentor Graphics CAD Tool including Eldo Circuit Simulator & Frontend design using XILINX-Vivado Simulator will enrich employability and develop Skill.
338	Digital Signal Processing & Applications Laboratory	ECEN3212	Employability & Skill Development - Hands on experiments on application of different transformation tools-z-transform, discrete fourier transform, fast fourier transform on signals and study on the frequency response of FIR and IIR digital filters and use of DSP processors for analysis of different real time signals will improve the employability & develop skills.
339	Telecommunication Systems	ECEN3234	Employability & Skill Development - Concepts of signaling techniques, setting up links, working principles and practical applications of FAX, EPABX, EFT, Email, ISDN etc , knowledge of EWSD, NGN, ADSL ports will increase the employability & develop skills
340	Electrical Machine-II	ELEC3101	Skill development in- Study of various operations of Synchronous machines and Induction machines
341	Power System-I	ELEC3102	Skill development in study of various methods of conventional power generation. Employability- To develop the electrical design and the mechanical design of power transmission system and to analyze the performance of different types of transmission lines.Study of the underground cables, different type of distribution systems and power factor correction techniques provides employability.
342	Signals & Systems	ELEC3103	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
343	Data Structure and Database Concept	ELEC3104	Employability & Skill Development - Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
344	Electrical machine Lab.-II	ELEC3111	Employability/Entrepreneurship on various testing of Synchronous machine and induction machines
345	Power system-I Lab.	ELEC3112	Skill development to evaluate ABCD parameters of transmission line and to analyse dc distribution network. Measurement of the break-down strength of different insulating materials and earth resistance provides employability.
346	Signals & Systems Lab	ELEC3113	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
347	DBMS Laboratory	ELEC3114	Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
348	Electronic Instrumentation	ELEC3131	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
349	Illumination Engineering	ELEC3132	Employability - Design and develop energy efficient indoor lighting schemes for proper illumination following different standards
350	Power System-II	ELEC3201	Employability and skill development in representation of power system, symmetrical and unsymmetrical fault analysis, power flow and stability analysis. Different grounding schemes, protective relays, circuit breakers and different protection schemes used for different sections of power system provides employability.
351	Power Electronics	ELEC3202	Employability - analyze the operation of different power electronic converters
352	Control System	ELEC3203	Entrepreneurship in control engineering designing. Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
353	Microprocessor & Microcontroller	ELEC3204	Skill development in microprocessor and microcontroller based system by acquiring concept of 8051 and 8085 architecture, assembly language programming and interfacing circuits. Design and analyze various microprocessor based systems to implement suitable application. Entrepreneurship for designing electronic products by learning the building blocks and programming of microprocessor and microcontroller, analytical and computer tools thereby creating employability.
354	Power System-II Lab.	ELEC3211	Employability and skill development in electrical power system protection by operating different types of relay and become proficient with computer skill (e.g. ETAP) for the analysis of power system and its protection.
355	Power Electronics Lab.	ELEC3212	Employability - In study of various power electronics circuits

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
356	Control System Lab	ELEC3213	Entrepreneurship in control engineering designing. Skill development to Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
357	Microprocessor & Microcontroller Lab	ELEC3214	Provides Employability/Entrepreneurship, skill development in electrical engineering by acquiring the basic concepts and properties of 8085 microprocessor and 8051 microcontroller. Analyze and write assembly language programming related to data transfer, arithmetic and logical operations, stack and subroutine operations to design suitable application. Interface various peripheral device with 8085 microprocessor and 8051 microcontroller to implement suitable application.
358	Digital Signal Processing	ELEC3231	Skill development in time domain signal processing and in developing efficient architectures of DSP
359	Electrical Machine Dynamics	ELEC3232	Skill development in the study of dynamic behaviour of different electrical machine.
360	Economics for Engineers	HMTS3101	Employability & Skill Development - It gives a basic idea how the business operates. Any student who work in productization, try to become an entrepreneur or heads a group in which he/she is responsible for profit and loss gets immensely benefitted by it. Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
361	Principles of Management	HMTS3201	Employability & Skill Development - The students joining a software firm soon gets promoted into leadership positions and need to manage projects where they need expertise for both technical issues as well the capability for handling human resources. So this is a must for students joining the industry. Skills and roles of a Manager, functions, principles. Acquire knowledge of planning process, Organizational design and structure, staffing, Decision-Making, coordinating and controlling. Organization Behaviour: Motivation, Leadership, Communication, Teams and Team Work.
362	Personality Development	HMTS3221	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques to face the non-technical round of the job interviews, which is an important milestone that they have to cross before being employed in a multi-national company. Learn SWOT Analysis. Expert in Professional Communication. Developed skills like: Leadership & Team Playing, Motivation, Negotiation Skills, Conflict Management and Planning & Envisioning.
363	Foundation Course on Finance, Economics & Marketing	HMTS5201	Employability & Skill Development - Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
364	Operating Systems Concepts	INFO3101	Employability & Skill Development - Acquired skill of system software that manages computer hardware and software resources.
365	Computer Architecture	INFO3102	Skill development in computer system structuring. Synchronization, communication and scheduling in parallel systems
366	Software Engineering & Project Management	INFO3103	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
367	DBMS	INFO3104	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator.
368	UNIX & Operating Systems Laboratory	INFO3111	Employability & Skill Development - Attain the knowledge in Programming for task, scheduling and memory management techniques.
369	Computer Architecture Laboratory	INFO3112	Employability & Skill Development - Gain knowledge of VHDL Simulator and apply on various complex application.
370	Software Engineering & Project Management Laboratory	INFO3113	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
371	DBMS Laboratory	INFO3114	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
372	Communication Theory	INFO3131	Skill development to analyze and design analogue and digital communication systems.
373	Compiler Design	INFO3132	Employability & Skill Development - Gain Knowledge in checking syntax, testing automation and natural language processing which helps in Employability.
374	Discrete Mathematics	INFO3133	Employability/skill development-improves computational skills and data analysis.
375	Data Warehousing & Data Mining	INFO3201	Employability & Skill Development - Acquire skill related to Hadoop and Hadoop Eco-System, Access and Process Data on Distributed File System. Attain knowledge to Develop Big Data Solutions using Hadoop Eco System.
376	Computer Networks	INFO3202	Employability & Skill Development - Gain knowledge on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels
377	Advanced Java & Web Technology	INFO3203	Employability & Skill Development - Attain the skill on how to develop web pages using HTML, Java Script and CSS. Implementation of server side program using servlet and JSP.
378	Data Analytics Lab	INFO3211	Employability & Skill Development - Gain knowledge in core programming basics and program design with functions using Python. Analyze real world datasets and apply suitable clustering algorithms to group data based on similarity.
379	Computer Networks Lab	INFO3212	Employability & Skill Development - A study on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
380	Advanced Java & Web Technology Lab	INFO3213	Employability & Skill Development - Attain the skill on how to develop web pages using HTML,Servlet and JSP program. Design XML document and DTD.
381	Seminar - I	INFO3221	Employability & Skill Development - Enhance employability due to knowledge of contemporary technology and communication skills.
382	E-Commerce & ERP	INFO3231	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
383	Computer Graphics & Multimedia	INFO3232	Employability through developing various applications which uses a multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video.
384	System Software and Administration	INFO3233	Employability & Skill Development - Learn the basics of system programs like editors, compiler, assembler, linker, loader, interpreter, debugger etc. Learn how to Install and manage disks and file systems.
385	E-Commerce & ERP Laboratory	INFO3236	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
386	Computer Graphics & Multimedia Laboratory	INFO3237	Employability & Skill Development - Acquire necessary skill for developing gaming and graphic environment .
387	System Software and Administration Laboratory	INFO3238	Employability & Skill Development - Configure different servers in linux system. Gain knowledge on how to Install and manage disks and file systems.
388	Artificial Intelligence	INFO3241	Employability & Skill Development - Motivates entrepreneurship in developing many applications like chat bot,increases business efficiency etc
389	Wireless & Mobile Computing	INFO3242	Employability & Skill Development - Helps in employability through understanding the issues surrounding the mobile platforms
390	Pattern Recognition	INFO3243	Employability & Skill Development - Acquired skill on how to recognize patterns by using machine learning algorithm.
391	Digital Logic Design	MCAP1101	Skill development to design applications of Sequential Circuits and Finite State Machines.
392	Introduction To Programming	MCAP1102	Skill development to apply high-level language to automate the solution for a problem.
393	Numerical And Statistical Techniques	MCAP1103	Skill development to understand the basics of numerical and statistical techniques and how those can be abstracted through logical variables and connectives.
394	Discrete Mathematics	MCAP1104	Skill development for understanding mathematical solutions.
395	Management Information System	MCAP1105	Entrepreneurship for accomplishments of managerial goals.
396	Digital Logic Lab	MCAP1111	Skill development to implement the design of Sequential Circuits and Finite State Machines.
397	Programming Lab	MCAP1112	Employability in the field of computer programming.
398	Object Oriented Programming With Java	MCAP1201	Skill development for objet oriented programming concept.
399	Data Structures	MCAP1202	Skill development to apply different types of data structures in algorithms.
400	Database Management Systems I	MCAP1203	Employability in the field of database management systems and Relational database.
401	Optimization Techniques	MCAP1204	Entrepreneurship to develop the idea of job sequencing to minimize the production time and costs, also to help production facility for staff allocation and equipment management.
402	Computer Organization And Architecture	MCAP1205	Skill development to understand the basic computer organization and architecture.
403	Object Oriented Programming Lab	MCAP1211	Skill development to solve real world problems using OOP techniques.
404	Data Structures Lab	MCAP1212	Skill development to evaluate solutions of a problem with different data structures to select suitable data structures for a solution.
405	Dbms I Lab	MCAP1213	Skill development to apply Standard Query Language (SQL) for relational databases.
406	Dynamics of Machines	MECH3101	Employability & Skill Development - Effect of dynamic forces in a system have consequences such as unbalancing and vibration. So, the topics covered in this subject will help the students in designing and maintaining of a machine.
407	Heat Transfer	MECH3102	Employability & Skill Development - In industrial application many a time heat exchangers are required to be designed. This course gives a basic idea on this.
408	Design of Mechanical Systems-I	MECH3103	Employability & Skill Development - Knowledge acquired by students in this paper will help them to take part actively in designing any product or modification of any existing product for better performance.
409	Fluid Mechanics & Hydraulic Machines Lab	MECH3111	Employability & Skill Development - Hands on traing on hydaulics equipment and hydraulic machines are helpful for direct bearing on employability.
410	Design Practice – I	MECH3112	Employability & Skill Development - In this paper students are discussed with industrial design practice of various machine components and also they are trained in various solid modeling tools of a CAD software. Knowledge on industrial design practice and modeling tools of a CAD software helps students takes part actively in product developement and/or modifications in any company.
411	Seminar-I	MECH3121	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
412	Fluid Power Control	MECH3131	Employability & Skill Development - Concepts on fluid power control may provide students an opportunity and a significant role in manufacturing industries.
413	Refrigeration & Air Conditioning	MECH3132	Employability & Skill Development - Theoretical concept of Refrigeration are required to design different refrigeration unit, calculating heat load etc.
414	Electrical Machines	MECH3133	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). A preliminary idea about the working principle and the charateristics of such machines will lead to an increased productivity in the shop floor.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
415	Fluid Power Control Lab	MECH3136	Employability & Skill Development - In the practical class, identification of various components of a Hydraulic and Pneumatic system, preparation of circuits using those components, along with the calculation of input power requirement, speed of actuator are done, which are integral parts of selection of input parameters in machining operations in industrial application.
416	Refrigeration & Air Conditioning Lab	MECH3137	Employability & Skill Development - Identification of various key components of a refrigeration and air conditioning system and the calculation of COP are extremely important for employment in refrigeration, air conditioning, and cryogenic engineering which is imparted in this Lab.
417	Electrical Machines Lab	MECH3138	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). Hands on training or a preliminary idea about the working principle and the characteristics of such machines will lead to an increased productivity in the shop floor.
418	Total Quality Management (TQM)	MECH3141	Employability & Skill Development - Students must have adequate knowledge on usages of various statistical tools and the techniques to be applied in the Industries to maintain consistency in quality.
419	Finite Element Method	MECH3142	Employability & Skill Development - FEM is the backbone of numerical validation of any product under design. So, knowledge on this paper will help them to be an active member in the RnD team of any company.
420	Turbo Machinery	MECH3143	Employability & Skill Development - Theoretical concept of turbomachines are required to design different hydraulic plant, power plant etc.
421	New Product Development	MECH3144	Employability & Skill Development - Theoretical knowledge on new product development concepts involving need analysis, technology forecasting and development planning.
422	Tool Engineering	MECH3145	Employability & Skill Development - Students understand directly tool geometry, cutting tool features suitable for adverse conditions and how to make a cutting tool.
423	Industrial Robotics	MECH3146	Employability & Skill Development - The topics covered in the course will help student to conceptualize, analyze, design and control of robots for different industrial applications.
424	IC Engines	MECH3201	Employability & Skill Development - Overall concept of conversion of fuel energy into mechanical energy including the various mechanisms which are required for conversion of motion will be highly applicable in automobile industry.
425	Machining Principle & Machine Tools	MECH3202	Employability & Skill Development - Machining and Machine tools are playing an important part in various manufacturing companies. It helps in delivering products and components to the maximum possible specifications. It is the main foundation for precision manufacturing.
426	Dynamics of Machines Lab	MECH3211	Employability & Skill Development - With the knowledge and experiences of this subject, students will be able to monitor vibration, measure unbalancing and do corrections, evaluate performance of governors, design a cam for specific application.
427	Applied Thermodynamics & Heat Transfer Lab	MECH3212	Employability & Skill Development - Practical knowledge on (i) dryness fraction of steam and (ii) various other devices involving convecting heat transfer coefficient will be an added advantage for students working in thermal power plant.
428	Seminar-II	MECH3221	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
429	Design of Mechanical Systems-II	MECH3251	Employability & Skill Development - In this paper students are taught about various machine component designs, like design of Gears, design of Breaks and Clutches, design of Pressure Vessels and design of Bearings. So detailed knowledge on this paper will give them a cutting edge to work with technical command in any mechanical company where these components are used extensively, or these machine elements are manufactured.
430	Mechatronics	MECH3252	Employability & Skill Development - Theoretical knowledge on industrial automation and control, CNC machines, robots and automated handling system.
431	Advanced Fluid Mechanics	MECH3253	Employability & Skill Development - Theoretical concept of advanced fluid mechanics are required to design modern hydraulic plant, power plant etc.
432	Design Practice - II Lab	MECH3256	Employability & Skill Development - Students are taught in detail about various Pre-processing and Postprocessing tools of a FEA software in this practical paper. Knowledge on numerical analysis of any object or product under various loading and boundary conditions using a FEA software gives the students immense capability and a fair opportunity to work in the R-n-D team of any core company or to do a research work efficiently in their higher studies.
433	Mechatronics Laboratory	MECH3257	Employability & Skill Development - Programming, operation and use of industrial automated equipment
434	Advanced Fluid Mechanics Lab	MECH3258	Employability & Skill Development - Practical knowledge of various hydraulic machines and piping systems would be helpful for students employment in various power plants.
435	Maintenance Engineering	MECH3261	Employability & Skill Development - Owning machines and plants are not enough unless the students have fair knowledge about how well the machines are maintained, upkept, mended and tended for restoration of plant performance.
436	Renewable Energy Systems	MECH3262	Employability & Skill Development - Comprehensive know-how must be acquired by students for different renewable energy systems in the backdrop of increasing global energy demands and fast-depleting fossil fuel reserves, including their selection criteria, design and maintenance for specific applications.
437	Materials Handling	MECH3263	Employability & Skill Development - A comprehensive knowledge must be acquired by the students for different material handling equipments, including its selection criteria, maintenance and design with the specific applications.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
438	CAD/CAM	MECH3264	Employability & Skill Development - CAD/CAM/CAE are the three pillar in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
439	Operations Management	MECH3265	Employability & Skill Development - CAD/CAM/CAE are the three pillars in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
440	Energy Resource	REEN5101	Employability & Skill Development - Student will learn different resources of renewable energy and how to extract energy economically to address global energy crisis
441	Renewable Energy I	REEN5102	Employability & Skill Development - Students will be able to explain the basics of solar PV cells and relevant parameters for its characterization. They will be able to explain the important features of first to third generation solar cell technology. They can also learn to design solar thermal collector
442	Materials for Energy conversion systems	REEN5104	Employability & Skill Development - Student will learn about the manufacturing process of nano-material and its characterizations techniques. They can design photovoltaic material and its electronic properties for the solar energy application and understand the role of selection for the wind turbine material and its required properties.
443	Solar Laboratory	REEN5111	Employability & Skill Development - Student will learn handle solar module and also learn to characterize them. Student will learn to handle solar power measuring instruments.
444	Energy Devices Laboratory	REEN5112	Employability & Skill Development - Student will learn to handle device and instruments that are used for storage and measurement of energy production and distribution
445	Seminar -I	REEN5121	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
446	Design of Heat Transfer Equipments	REEN5141	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes. They can design heat exchanger network also.
447	Renewable Energy II	REEN5203	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
448	Non solar laboratory	REEN5211	Employability & Skill Development - Student will be able to design processes producing alternative source of energy. They can characterize the quality of fuel generated from alternative source and operate electrical equipments for power generation.
449	Internship	REEN5221	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to an industry engaged in harvesting energy from renewable resource
450	Seminar -II	REEN5222	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
451	Measurement and Control for Energy System	REEN5241	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameter for the process related to energy production and distribution.
452	Energy & Environmental Impact Analysis	REEN5242	Employability & Skill Development - The students will be able to identify the Basics of Environmental Engg. Principles need for carrying out EIA. The students will be able to analyze different technologies and Legislations / Rules. The students will be able to implement Do's & Don'ts practices for Renewable Energy Endeavours.
453	Electronics Instrumentation & Control for Energy System	REEN5244	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameter for the process related to energy production and distribution.
454	Telemetry & Remote Control	AEIE4101	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design bi-telemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution systems for telemetry in process plants.
455	Power Electronics and Drives	AEIE4102	Employability & Skill Development - Gain practical knowledge about power electronic devices. Analyze various single phase power converter circuits and understand their applications. Practical knowledge about using simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.
456	Telemetry & Remote Control Lab	AEIE4111	Employability & Skill Development - Design and handle a transmitting and receiving section of a telemetry system. Design bi-telemetry system used in critical cases. Handle computerized control wireless telemetry system. Use data acquisition and distribution system for telemetry in process plants.
457	Power Electronics and Drives Lab	AEIE4112	Employability & Skill Development - Gain practical knowledge about power electronic devices and simulation software in power electronics. Design and simulate gate firing circuits. Design and simulate rectifier, chopper and AC voltage controller. Develop skills to build and troubleshoot power electronics circuits.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
458	Industrial Training Evaluation	AEIE4131	Employability & Skill Development - This course has been designed for the students to gain real life working experience by visiting a Process Plant / Industry for a specified period. Thus, each & every student of AEIE should undergo industrial training for 4 weeks, during 6th – 7 th Semester break in reputed Private / Public Sector / Government organization / companies.
459	Advanced Process Control	AEIE4141	Employability & Skill Development - Develop the process models in digital domain and analyze stability of the system in digital domain. Able to develop algorithms for design of various controllers. Learn the architecture of automation systems 6. Familiar with the protocols used for designing of automation systems.
460	Soft Computing	AEIE4142	Employability & Skill Development - Design and analyze the different components of fuzzy controller appropriately to obtain the best possible fuzzy controller that can be applied to any process control systems. Acquire knowledge of different ANN terminologies to apply in solving control problems. Analyze and design algorithms for different supervised and unsupervised learning networks. Illustrate biological background and give idea about basics of genetic algorithm and its application in optimizing controller parameters
461	Power plant Instrumentation	AEIE4143	Employability & Skill Development - Design P&I diagrams for different control loops associated with thermal, hydal and Nuclear power plant. Investigate, formulate and analyze the safety requirements during power plant operation and accordingly able to design instrumentation systems for safety interlocks in power plant. Design Turbine supervisory instrumentation system. Apply engineering knowledge towards the treatment of water for industrial use. Apply contextual knowledge for analysis and measure of pollutant produced by thermal power plant.
462	Instrumentation and Telemetry	AEIE4181	Employability & Skill Development - Select the suitable pressure transducer, flow transducer, level transducer and temperature transducer for industry use. Understand the functional components of voltage, current and frequency telemetry. Familiar with the scheme of transmission of multiple sensor data based on time division multiplexing and frequency division multiplexing.
463	Introduction to Embedded Systems	AEIE4182	Employability & Skill Development - This introductory course helps students to learn the working principles of embedded systems, which might be essential for an automobile company to a company that develops that caters the clients manufacturing consumer electronic and or electrical goods. Design different embedded systems with microcontroller of different memory specification or RAM specification. Design single purpose processors and basic architecture and operation, multipurpose controller-architecture, operation, codes and programming. Understand the application of different RAMs and ROMs and interfacing. Interface microcontroller and design the hardware and software to control the operation of I/o devices like LCDs, Keyboard, Stepper Motor, A/d converter etc.
464	Project I	AEIE4191	Employability & Skill Development - Project should be on any topic having relevance with Electronics, Instrumentation, Electrical or inter-disciplinary field of engineering. Project should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
465	Comprehensive Viva Voce	AEIE4231	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning. Gain confidence and inter-personal skills.
466	Technical Seminar II	AEIE4232	Employability & Skill Development - The main objective of this course work is to encourage self-learning in the field of student's own interest among the emerging areas of technology. The student is expected to do an extensive literature survey in his subjects of interest and present seminar on a research problem, available methods in literature, future trends, etc. to a group of experts.
467	Analytical Instrumentation	AEIE4241	Employability & Skill Development - Get ideas of different analytical methods like pH analysis, conductivity analysis etc.for liquid sample. Understand UV-VIS , IR spectroscopic techniques for the liquid analysis. Know X-ray spectroscopy and NMR spectroscopy for the analysis of sample. Familiar with gas chromatography and liquid chromatography for sample analysis.
468	Ultrasonic Instrumentation	AEIE4242	Employability & Skill Development - Know about ultrasonic equipments, A, B, and M-scan presentation of test indications and interpretation. Develop knowledge on different ultrasonic methods of applications. Apply the knowledge of ultrasonic instrumentation for non-destructive testing. Applications of ultrasonic instruments for measuring thickness, depth, flow and level. Applications of ultrasonic instrumentations in medical sciences.
469	Digital Control Systems	AEIE4243	Employability & Skill Development - Design of digital control systems with digital controllers through bilinear transformation; digital PID-controller; different class of digital controllers, general synthesis method, dead beat response design, Dahlin design, ringing and placement of poles.
470	Sensor Technology	AEIE4281	Employability & Skill Development - This subject enables students to grab the concepts and application of different mechanical, electrical and acoustic sensors. Acquire the fundamental knowledge in micro sensors, sensor materials, properties and industrial applications. Understand the application of IC technology and photolithography technique in micro sensors. Learn the basics of sensor networking, coding and smart sensors and propose a sensor system design to solve a problem, a very helpful course for working IOT.
471	Control Systems and Applications	AEIE4282	Employability & Skill Development - Models of control devices and systems - dc servomotors, ac servomotors, dc motor speed and position control, synchro. Basic control actions- Introduction to conventional controllers (P, PI, PD and PID) and application.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
472	Project II	AEIE4291	Employability & Skill Development - Demonstrate ability to identify and formulate real world engineering problems relevant to society needs. Apply knowledge of circuit design, sensor selection, signal processing, control system, embedded system and programming, etc., to implement the project work with proper time frame. Implement hardware model along with its relevant software programming, conduct experiments, analyze and interpret data and explain them. Develop interpersonal communication skill and demonstrate sound technical knowledge of their project work.
473	Animal Cell Culture & Animal Biotechnology	BIOT4101	increases skill development in cell culture techniques in diagnostics and research
474	Bioseparation Technology	BIOT4102	skill development in separation processes and techniques
475	Food Biotechnology	BIOT4141	increases employment opportunity for food processing and food preservation
476	Environmental Biotechnology	BIOT4142	skill development in environmental engineering and policies
477	Bioprocess & Process Instrumentation	BIOT4143	skill development in separation techniques
478	Modeling & Simulation of Bioprocess	BIOT4161	skill development in knowledge of modeling and simulation of biological pathways
479	Biomaterials	BIOT4162	increases employment opportunity in bioimplants sector
480	Biometallurgy	BIOT4163	increases employment opportunity in metallurgy sector
481	Proteomics and Protein Engineering	BIOT4164	increases skill development in proteomics tools
482	Human Genomics	BIOT4165	increases employment opportunity in human genomics research and analysis
483	Biosensors	BIOT4181	Employability & Skill Development - This subject familiarizes students with bio-recognition elements and introduces them to transducers and biosensors. Knowledge in this subject is beneficial to students for acquiring jobs in clinical and diagnostic sector, industrial sector, food and environment sector, defence sector and a host of other areas.
484	Biopolymers	BIOT4182	increases skill development in production of different products by biopolymer
485	Renewable Energy Technology	BIOT4241	increases employment opportunity in renewable energy sector
486	Tissue Engineering	BIOT4242	increases employment opportunity in tissue manufacturing and pharmaceutical sector
487	Biomedical Engineering	BIOT4243	increases employment opportunity in biomedical instrumentation sector
488	Post Harvest Technology	BIOT4244	increases employment opportunity in crop harvesting sector
489	Metabolic Engineering	BIOT4245	increases skill development in metabolic processes and pathways
490	Medical & Pharmaceutical Biotechnology	BIOT4246	increases employment opportunity in pharmaceutical industries
491	Basic Process Equipment Design	BIOT4247	increases employment opportunity in designing sector and processing sector
492	Computational Biology	BIOT4281	Increases employment opportunity in bioinformatics and drug designing sector Molecular Modeling and Dynamics: introduction to Open MM library; GROMACS as an example of GUI in the public domain; computer based drug design (public domain and proprietary); Mathematical modeling of cell growth kinetics; Embedded systems for computational biology: High throughput data collection, processing and analysis; LCMS, DNA microarrays and other applications; Systems biology and Metabolic Engineering.
493	Non-conventional Energy	BIOT4282	Employability & Skill Development - Application of the concepts of solar energy to design Photovoltaic cells and wind energy to design wind turbine , Understanding the concept of hydrogen energy as a clean fuel and characterize the hydrogen production process etc will enhance employability & develop skills.
494	Modeling Simulation & optimization	CHEN4103	Employability & Skill Development - students will be able to analyze the given system to mathematically formulate the complete optimization problem required. students will be able to select the appropriate separation process and process equipment, and will be able to apply heuristics for choosing the correct operating methods for the equipment.
495	Industrial Training	CHEN4131	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to a chemical industry
496	Seminar II	CHEN4132	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner
497	Reactor Design	CHEN4141	Employability & Skill Development - The course demonstrate the technique to design reactor that can handle multiphase multicomponent system of species.
498	Industrial Safety & Hazard Analysis	CHEN4142	Employability & Skill Development - Ability to use important technical fundamentals of chemical process safety and to impart basic Students get knowledge that allows to evaluate occupational safety and health hazards in the workplace. They can also be able to determine hazard and potential hazard areas and to adopt appropriate hazard controls. They can analyze the effects of workplace exposures, injuries and illnesses, fatalities.
499	Safety and Hazard Analysis	CHEN4181	Employability : Ability to understand and recognize the important technical fundamentals of chemical process safety and to impart basic knowledge that allows the students to evaluate occupational safety and health hazards in the workplace.
500	Project Management	CHEN4182	Employability & Skill Development - This subject is considered to be fundamental for achieving the target of cost, time and scope of chemical and mechanical engineering activity. This skill will enable students to excel in their respective area of work.
501	Plant Design	CHEN4221	Employability & Skill Development - Students will learn to design a chemical process industry and also can assess the techno-economic feasibility of the the plant.
502	Catalysis & Catalytic Reactor Design	CHEN4241	Employability & Skill Development - Student will learn to identify and formulate problems in chemical and biochemical reaction engineering and find appropriate solutions. Student can able design bioreactors for both enzymatic and live cell catalyzed reactions.



SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
503	Total Quality Management	CHEN4242	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
504	Total Quality Management & Assurance	CHEN4282	Skill development in understanding the significance of quality management inside and outside of the organization, to identify and control the quality of processes, to evaluate the process capabilities of different processes in any business process, to apply modern quality management like Six Sigma techniques. Skill development in various sampling techniques and develop different sampling plans to evaluate quality of various types of defects, to prepare network of activities involved in project for plant design or other business processes , to carry out the final feasibility study and and economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method
505	Water Resources Engineering	CIVL4101	Employability: Water resources play an important role in the economic development of a nation. No one can imagine the life of living beings without the consumption of water. A water can use by the nation for various purpose such as hydro electricity, irrigation, etc.
506	Computer Application in Civil Engg	CIVL4111	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
507	Industrial Training Evaluation	CIVL4131	Employability: Industrial training, where a student undertakes a period of training with an organization usually during a semester break, act as an important part in preparing the student for a professional career. With the active involved preparation, the student learns about the industrial demands, skill set and work ethics.
508	Seminar II	CIVL4132	Entrepreneurship: To impart training to the students in collecting materials on a specific topic from journal or other sources and organise them into logical sequence and presenting the matter effectively both orally and as technical report.
509	Advanced Structural Analysis	CIVL4141	Employability: Civil engineers use structural analysis to assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces using matrix method applications.
510	Remote Sensing and GIS	CIVL4142	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.
511	Advanced Pavement Engineering	CIVL4143	Employability: The ultimate aim of pavement design is to ensure that the transmitted stresses due to wheel load are sufficiently reduced, so that they will not exceed bearing capacity of the sub-grade. Two types of pavements are generally recognized as serving this purpose, namely flexible pavements and rigid pavements.
512	Hydraulics Structures	CIVL4144	Employability: Without hydraulic structures, the world would be spending half of their time looking and fetching water. Hydraulic structures are built to make life easier, pleasant and secure. The building of these structures not been easy especially when civil engineering was not modernized.
513	Soil Dynamics and Machine Foundations	CIVL4161	Employability: Soil dynamics drive elemental cycles, have controlling roles in ecosystem functions, and are largely determinants of emergent properties (properties not obvious from the study of processes at finer levels of organization), such as decomposition rates, biodiversity, and system stability. A machine foundation necessitates a special concern as they are designed to transmit dynamic loads to soil strata in addition to static loads.
514	Structural Dynamics & Earthquake Engineering	CIVL4162	Employability: Structural dynamics of earthquake engineering: theory and application using Mathematica and Matlab provides civil and structural engineers and students with an understanding of the dynamic response of structures to earthquakes and the common analysis techniques employed to evaluate these responses
515	Environmental Pollution & Control	CIVL4163	Employability : To understand various types of global environmental issues and learn about the different kind of pollution .
516	Advanced R.C.C. Design	CIVL4164	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structures which are of high importance.
517	Building Materials	CIVL4181	Employability & Skill Development - To construct any building, proper materials selection is very important part of the project. This subject prepare the promising engineers suitable for industry and also learn how to build the building with minimum cost and assess the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates, concrete, steel, etc
518	Hydrology	CIVL4182	Employability: Hydrology has evolved as a science in response to the need to understand the complex water systems of the Earth and help solve water problems. Hydrologists play a vital role in finding solutions to water problems, and interesting and challenging careers are available to those who choose to study hydrology.
519	Environmental Pollution & Control	CIVL4183	Employability: Understand the essential concepts of Air and Noise pollution.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
520	Project -I	CIVL4191	Employability: Students undertake a research/ industrial/practical oriented project work under the guidance of a particular faculty. In-depth knowledge on a particular topic helps the student to be industry ready.
521	Construction Planning and Project Management	CIVL4201	Employability : To understand the various construction equipments and its implementations , different building laws , CPM & PERT .
522	Comprehensive Viva Voce	CIVL4231	Employability: The objective of comprehensive viva-voce is to assess the overall knowledge of the student in the relevant field of Engineering acquired over 4 years of study in the undergraduate program .
523	Bridge Engineering	CIVL4241	Employability: Bridge engineering is an engineering discipline branching from civil engineering that involves the planning, design, construction, operation, and maintenance of bridges to ensure safe and effective transportation of vehicles, people and goods
524	Traffic Engineering and Transportation Planning	CIVL4242	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
525	Advanced Foundation Engineering	CIVL4243	Employability & Skill Development -
526	Finite Element Analysis	CIVL4244	Employability: Finite Element Analysis (FEA) is a method of analysing how a part or assembly will perform over its lifetime. FEA enables you to predict potential design issues and therefore minimise risk to your product, profits, and your business.
527	Remote Sensing and GIS	CIVL4281	Employability: GIS facilitates the process by which we can visualize, analyze and understand this data. Remote sensing is one of the methods commonly used for collecting physical data to be integrated into GIS. Remote sensors collect data from objects on the earth without any direct contact.
528	Principles of Surveying	CIVL4282	Employability & Skill Development - Surveying is the art of determining the relative position of various features above, on, or beneath the surface of the earth by means of different instruments. Students learn by their own hand the application of surveying and it is very much helpful to the industry and also develop their skills. The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
529	Project Planning and Management	CIVL4283	Employability & Skill Development - This subject help the students for employability because the students Think of their plan as a roadmap for stakeholders, break the project into a list of deliverables, Talk to their team, identify risks, create a budget, add milestones, set progress reporting guidelines etc.
530	Project II	CIVL4291	Employability: Students undertake a research/ industrial/practical oriented project work under the guidance of a particular faculty. In-depth knowledge on a particular topic helps the student to be industry ready.
531	Compiler Construction	CSEN4101	Employability & Skill Development - This courses teaches the students all the phases of thorough which a compiler runs while translating a code and also to write compiler for a given language. Though the writing a of new compiler does not arise everyday in the industry, still the concepts help a lot to write a cross compiler for translating code from one language to other and many times companies working in DSP s need to implement a language with a small set of instructions, though it ost happens at assembly level, the concepts of compiler construction are difficult to ignore if one wants to contribute effectively in such projects or products.
532	Compiler Construction Lab	CSEN4111	Employability & Skill Development - It complements the theory course in compiler and helps the students to become confident with the in depth knowledge of how a program is compiled and how it really works; what are the data structures and techniques associated with it.
533	Industrial Training	CSEN4131	Employability & Skill Development - This course allows the students to get an exposure to the projects that are currently ongoing in a industry as an intern or a trainee. They acquire ample knowledge on how to execute real-life projects in the industry.
534	Seminar II	CSEN4132	Employability & Skill Development - Soft skills and presentation abilities constitute an important part of majority job profiles. This subject gives each student the much needed opportunity to work as a team, present to an audience and receive constructive feedback on their performance which helps them to identify areas that need improvement.
535	Information Retrieval	CSEN4141	Employability & Skill Development - This course is a must for students working in Natural Language Processing.(NLP) projects in the companies that develop projects/products requiring NLP. It may be softwares for social media, customer interface or even fraud detection.
536	Advanced Operating System	CSEN4142	Employability & Skill Development - Any system related jobs or companies developing linux based open source software have a need for this expertise.
537	Data Mining and Knowledge Discovery	CSEN4144	Employability & Skill Development - Many companies thrive on mined data from internet or customer data generated from online purchases, or by discovering patterns from financial data. These companies need professionals with the proper trains in Data Mining.
538	Cloud Computing	CSEN4145	Employability & Skill Development - The days of proprietary infrastructure is fast receding and in practice more and more companies are becoming confident to keep their valued data on cloud. Under this scenario, many service-oriented companies also get huge projects that require a knowledge of cloud computing in the background and also have dedicated teams looking after cloud aspects. This course help our students to target those jobs.
539	Natural Language Processing	CSEN4161	Employability & Skill Development - In this age of automation and AI driven industry, NLP is the course that companies look for along with ML in the curriculum, so it helps the students to apply for these high-paying new-age jobs.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
540	Cryptography and Network Security	CSEN4162	Employability & Skill Development - As internet banking and online purchases are increasing by leaps and bounds, the cases of fraud related to these technologies are on the rise. The knowledge of cryptography and cyber security have become a dire necessity while implementing these software. A few of our students work in specialized cryptography applications in the industry.
541	Graph Algorithms	CSEN4163	Employability & Skill Development - This course helps in a handful of companies that builds software based on graph models. There are companies that work on map-analytics, network congestion, traffic flow modeling and apart from that software programs that use graph traversals to solve a practical problem.
542	Parallel Algorithm	CSEN4164	Employability & Skill Development - This advanced course helps students to learn how an algorithm can be executed simultaneously by dividing it into independent sub-algorithms, which is very much required by companies that design processors. Also a lot of research happens on this topic, so for higher studies also this is an important skill.
543	Web Intelligence and Big Data	CSEN4165	Employability & Skill Development - This course is about building 'web-intelligent' applications exploiting big data sources arising in social media, mobile devices and sensors, using new big-data platforms based on the 'map-reduce' parallel programming paradigm. Hence all data driven companies need this expertise.
544	Fundamentals Of Operating Systems	CSEN4181	Employability & Skill Development - Understanding the various design issues in process management , learning of operating system operation, structures etc will enhance employability & develop skills.
545	Web Intelligence and Big Data	CSEN4182	Employability & Skill Development - Understanding on the key issues in big data management and its associated applications in intelligent business and scientific computing, the knowledge of Big Data and web intelligence on industry applications etc will enhance employability , Entrepreneurship & develop skills.
546	Project I	CSEN4191	Employability & Skill Development - As part of this subject students work on a computing problem in a team and try to come up with insights and solutions to the problem, under the guidance of a mentor. This experience of working as a team and the exposure to problem analysis helps to groom them for their future professional commitments.
547	Distributed Algorithms	CSEN4241	Employability & Skill Development - Behind every computing process and every program design is an algorithm, that guarantees the success of the process when formulated properly. As computation becomes more distributed, the algorithm also evolves along with it. A knowledge of distributed algorithm design is must for many job profiles that deal with distributed systems.
548	Approximation Algorithms	CSEN4242	Employability & Skill Development - Optimization problems that are NP-hard are an important category of problems in computer science. Studying efficient approximation algorithms to find appropriate solutions to such problems prepare students to tackle research oriented job profiles that need knowledgeable candidates to tackle complex problems.
549	Pattern Recognition	CSEN4244	Employability & Skill Development - Extracting meaningful features from a vast repository of media resources is a very important line of work in recent times that arm employers with a wealth of information. Pattern recognition teaches the student how to empower machines with human recognition intelligence and thus extract useful and critical information.
550	Social Network Analysis	CSEN4245	Employability & Skill Development - In this current era of customised products and target oriented research and recommendations this subject is an essential addition. Students undertaking this subject learn how to look for patterns of relation among people and groups and thus enabling them make important deductions.
551	Mobile Computing	CSEN4246	Employability & Skill Development - The underlying network architecture of data communication in a mobile environment is a must to have knowledge for any computer science engineer. Knowing the concepts of such data communication is sure to give students an edge in the job market.
552	Distributed Databases	CSEN4261	Employability & Skill Development - Most job profiles in computer science have one aspect in common and that is data storage. This is even more relevant in the current times of big data where the amount of data being generated has increased manifold and this data needs to be stored and accessed in a distributed environment. This subject provides knowledge that will familiarize students with the nuances of data storage and access.
553	Image Processing	CSEN4262	Employability & Skill Development - Any company working in computer vision (such as remote sensing, pattern matching) needs students who have attended this course.
554	Soft Computing	CSEN4263	Employability & Skill Development - Any project that requires to solve some NP-complete (hard) problems in real time, which are not solvable in polynomial time at all need such a course.
555	Machine Learning	CSEN4264	Employability & Skill Development - This is a one-level up course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc. Right now whole computation system is data driven and machine learning helps students to use it as a tool to provide data-driven services.
556	Real Time & Embedded System	CSEN4265	Employability & Skill Development - This advanced course helps students to learn the real-time working principles of embedded systems, how they communicate and process among themselves in real-time, which is very much required in this modern era of IOT.
557	Distributed Databases Lab	CSEN4271	Employability & Skill Development - Distributed Database Systems lab simulates real-world, hardware, software, and command-line interface environments. The DDBMS lab course covers fundamental concepts necessary for designing, using, and implementing database systems and applications; database modeling and design; languages and models provided by database management systems; and database system implementation techniques.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
558	Image Processing Lab	CSEN4272	Employability & Skill Development - It complements the theory course in image processing and student learns various matlab and python based tools to do computations on various type of images, which is a must before joining any company in the computer vision or handling image processing projects.
559	Soft Computing Lab	CSEN4273	Employability & Skill Development - Students get a chance to do some basic projects, where various soft computing techniques like fuzzy logic, genetic algorithms and other evolutionary algorithms are learnt through real-life problems.
560	Machine Learning Lab	CSEN4274	Employability & Skill Development - It complements the theory course in Machine Learning and student learns various tools like tensorflow, azure and other python based tools to operate on various data-driven real life problems.
561	Real Time & Embedded System Lab	CSEN4275	Employability & Skill Development - Students get a chance to work on some Arduino projects that give the test of making something work on their own before joining the industry.
562	Fundamentals of RDBMS	CSEN4281	Employability & Skill Development - Master the basic concepts and understand the applications of database systems. Understand the basic database storage structures and access techniques. 6. Distinguish between good and bad database design, apply data normalization principles, and be aware of the impact of data redundancy on database integrity and maintainability. Construct queries and maintain a simple database using SQL. Apply database transaction management and database recovery.
563	Project II	CSEN4291	Employability & Skill Development - The team work skills and problem analysis skills that the students start to learn with the subject Project I are further intensified in this subject. The focus here is more on arriving at a solution, in the form of a research paper, or a website design etc. and presenting the solution to a distinguished audience. The experience of team work, solution-oriented approach and presentation skill help the students in acquiring and pursuing lucrative jobs.
564	RF & Microwave Engineering	ECEN4101	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills.
565	Coding & Information Theory	ECEN4102	Employability & Skill Development - Knowledge of entropy, mutual information and channel capacity for all types of channels, Estimation of the merit of various methods for generating and detecting different types of error correcting codes will develop the skill.
566	Advanced Communication Systems	ECEN4103	Employability & Skill Development - Understanding on different wireless networks and their operations, the current multiplexing and modulation schemes will enhance employability & develop skills.
567	RF & Microwave Engineering Laboratory	ECEN4111	Employability & Skill Development - Understanding of high frequency electromagnetic wave propagation characteristics, analysis of microwave passive components, knowledge on semiconductor and vacuum tube devices and design high frequency filters will develop skills.
568	Advanced Communication Systems Laboratory	ECEN4113	Employability & Skill Development - Hands on experiments on working of fiber optic links, various real time applications of wireless communication system will enhance employability & develop skills.
569	VLSI Design Automation	ECEN4181	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques that are required to build a chip in a precise manner, which is done by a robotic arm and at the nano meter scale, so precision really matters. All these skills are very much required in a multi-national EDA company. Determine logic and performance of CMOS combinational as well as sequential logic and apply the lambda based design rules. Construct physical layout design and stick diagram of digital gates. Classify between VLSI design cycle, style and methodology and also build various stages of miniaturization. Make use of various synthesis flow and HDL modeling in ASIC semi custom design. Build different logical synthesis algorithm.
570	Principles of Communication systems	ECEN4183	Employability & Skill Development - In this modern era of fast communication one must know all the different principles of communication, the course provides the students with all the basics that are required to work in a company that develops software for voice or data communication.
571	Remote Sensing using Satellites	ECEN4241	Employability & Skill Development - Realization of the physical, architectural and networking issues of the satellite system, concepts of basics of remote sensing principles and technology etc will enhance employability & develop skills.
572	Cellular and Satellite Communications	ECEN4281	Employability & Skill Development - Identify GSM and CDMA Cellular architecture and its various parameters. Multiple access techniques used for Satellite Communication. Understand various orbits, orbital parameters, satellite launch vehicles etc. Design uplink and downlink for satellite networks.
573	VLSI Design	ECEN4282	Employability & Skill Development - This course helps the learners to learn the basic principles of building various analog and digital circuits from scratch. Starting from CMOS. All these are very much required in a multi-national semiconductor company.
574	VLSI Testing & Verification	ECEN4283	Employability & Skill Development - Without testing no chip can go to the market and this course provides the learners all the knowledge of how to write a software that can perform the pre and postbond testing.
575	Seminar-I	ELEC4031	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.
576	Seminar-II	ELEC4032	Skill development as a gathering of people for the purpose of discussing a stated topic giving seminar a conference or other meeting for discussion or training.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
577	Electric Drives & Power Utilization	ELEC4101	Employability -Study of different drives system with its practical application and different braking schemes .Explain application field of drives in traction system . Knowledge of Other application in the field of electric heating ,welding and illumination engineering.
578	High Voltage Engineering	ELEC4102	Employability/Entrepreneurship-Generation, Measurement and Testing of high voltage
579	Electric Drives Lab	ELEC4111	Employability -Application of drives by using power electronics circuit for smooth control of various types of motor's speed.
580	Electrical Machine Design	ELEC4121	Employability/Entrepreneurship in Machine Design, design and develop transformer, induction motor, heating element and reactor, electronic
581	Advanced Power System	ELEC4161	Employability & Skill Development - Economic dispatch and Unit Commitment helps to know the effective usage of the power flow in GRID. Skill development to analyze the load Frequency control and voltage control. Knowledge of travelling waves, generation of overvoltages on transmission lines & its protection, different compensation techniques in power system and the application of FACTs provides employability & skill development in Power System. Introduce HVDC transmission.
582	Advanced Control System	ELEC4162	Employability -In the design for mathematical modeling of finding Transfer function of physical systems , Time response, compensating techniques etc,
583	Circuit Theory Analysis	ELEC4182	Employability : to understand network equation , laplace transform , graph theory , two port Networks etc .
584	Project - I	ELEC4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints
585	Electrical System Design	ELEC4221	Employability- Design power distribution system, installation design of multistoried residential building, designing of a substation, design of control circuit of lift mechanism, road lighting scheme, energy efficient lighting scheme.
586	Fundamentals of Illumination Engineering	ELEC4282	Employability : to get acquainted with the laws of Photometry for calculation of illumination levels for different lighting operations .
587	Project - II	ELEC4291	Encourages entrepreneurship, skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time.The primary challenge of project management is to achieve all of the project goals within the given constraints
588	Professional Development	HMTS4121	Entrepreneurship: The start-up ecosystem in India- Why entrepreneurship?, Indian tech start-up landscape, Stand-up India policies, funding agencies, market development, trends and best practices E-Commerce- India as a growing E-commerce market, Possibilities of growth, funding, niche retailers Make in India- New processes, Investments, Focus sectors, Makers of Make In India, Opportunities, Policies.
589	Organizational Behaviour	HMTS4201	Employability & Skill Development - A comprehensive knowledge of interpersonal and leadership skills, motivation, attitude and perception are essential for any job engagement. Organizational behaviour aims to empower students with such essential knowledge and make them ready to take on any responsibility with confidence and conviction.
590	Project Management	HMTS4202	Employability & Skill Development - Project management is considered to be fundamental for achieving the target of cost, time and scope of any engineering activity. This skill will enable students to excel in their respective area of work.
591	Bioethics & IPR	HMTS4203	Employability & Skill Development - increases skill development in bioethics guidelines, patenting and trademark
592	Introduction to Industrial Sociology	HMTS4281	Employability & Skill Development - Industrial sociology is an applied discipline. It is concerned with the study of human relations as they grow and operate in the field of industries. It deals with the sociological concepts that have relevance to industry. It concentrates upon the social organizations of the work place or industry.
593	Critical Gender Studies	HMTS4282	Employability: Gender studies in the two-year program is defined as “critical” Gender Studies, signaling the ways in which students are trained to critically analyze established ideas, systems, and inequalities that decrease the possibilities for women and men to fully reach their human potential.
594	Elementary Spanish for beginners	HMTS4283	Employability & Skill Development - In this course, students will learn both basic and advanced Spanish vocabulary, grammar and pronunciation, that helps in companies who headquarters in Spain or Latin American countries.
595	Internet Technology	INFO4101	Employability & Skill Development - Understanding best technologies for solving web client/server problems, analyze and design real time web applications, use Java script for dynamic effects and to validate form input entry.
596	Image Processing	INFO4102	Skill development in image processing and image programming helps in employability.
597	Internet Technology Laboratory	INFO4111	Employability & Skill Development - Gain knowledge in client side programming ,interactive web applications .
598	Image Processing Laboratory	INFO4112	Skill development in image processing and image programming helps in employability.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
599	Industry Competence Laboratory	INFO4121	Employability & Skill Development - Helps in employability through a project with industry orientation aspects directly suggested by experienced person from Software Industry. Also develop skill for creating Requirement Specification of allotted project with industry specified Requirement Specification Standard. Develop manual testing modules as guided by industry expert.
600	Industrial Training Evaluation	INFO4131	Employability & Skill Development - Helps in employability through a real life industry environment and also work as a part of the team . Gather experience of team work ,work sharing and work scheduling in real time scenario.
601	Distributed Operating System	INFO4141	Employability & Skill Development - Learn about operating system design and implementation including Operating system structure, Synchronization, communication and scheduling in parallel systems
602	Cyber Law & Security Policy	INFO4142	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.
603	Fundamentals of Cloud Computing	INFO4143	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing.
604	Cyber Crime & Cyber Security	INFO4181	Employability & Skill Development - Understanding the various techniques of protecting computers, networks, programs and data from unauthorized access or attack.
605	Cloud Computing	INFO4182	Employability & Skill Development - Learn the technique on how to design and development of projects with less resources. Study on demand services and applications in the remote computing. Understanding of the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc & system, network and storage virtualization and outline their role in enabling the cloud computing system model will enrich employability & develop skills.
606	Project - I	INFO4191	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints.
607	Comprehensive Viva Voce	INFO4231	Employability & Skill Development - Gain knowledge about contemporary issues in various subjects.
608	Parallel Computing	INFO4241	Employability & Skill Development - The use of parallel processing for running advanced application programs efficiently, reliably and quickly.
609	Natural Language Processing	INFO4242	Employability & Skill Development - The ability of a computer program to understand human language as it is spoken.
610	Cryptography & Network Security	INFO4243	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet. Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network.
611	Soft Computing	INFO4244	Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
612	Fundamentals of Cryptography	INFO4281	Employability & Skill Development - A study on how to protect against the unauthorized use of information in internet. Skill development in data security which targets a variety of threats and stops them from entering or spreading on your network. Understanding of various tools and protocols for different levels of security, principles of public-key cryptosystems, hash functions, and digital signature will enhance employability & develop skills.
613	Soft Computing Application	INFO4282	Skill development to identify interactive problems, reproduce optimal solution, to determine complexity of computation, to assemble different techniques to sketch a hybrid system, able to interpret the problems in terms of time and space, justify optimal solution and able to predict the running time of the program Entrepreneurship in Software computing which is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems. The approach enables solutions for problems that may be either unsolvable or just too time-consuming to solve with current hardware.
614	Project - II	INFO4291	Skill development in project management by initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge of project management is to achieve all of the project goals within the given constraints.
615	Operation Research and Optimization techniques	MATH4181	Employability & Skill Development - Operations Research (OR) is a field in which students use mathematical and engineering methods to study optimization problems in Business and Management, Economics, Computer Science, Civil Engineering, Electrical Engineering, etc. This subject focuses on deterministic optimization techniques, which is a major part of the field of OR followed by several efficient algorithms for solving linear programs, integer programs, and nonlinear programs.
616	Linear Algebra	MATH4182	Employability & Skill Development - This course covers matrix theory and linear algebra, emphasizing topics useful in other disciplines. Linear algebra is a branch of mathematics that studies systems of linear equations and the properties of matrices. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering and most importantly in any company that requires machine learning for its projects

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
617	Probability and Stochastic Process	MATH4281	Employability & Skill Development - This course makes students gain familiarity with probability and stochastic processes concepts which they need for their experiments and research. It also covers theoretical concepts of probability and stochastic processes pertaining to handling various stochastic modeling. This course provides random variable, distributions, moments, modes of convergences, classification and properties of stochastic processes, stationary processes, discrete and continuous time Markov chains and simple Markovian queueing models, all of this is very much essential for companies using machine learning to boost up their sales.
618	Advanced Computational Mathematics and Graph theory	MATH4282	Employability & Skill Development - Advanced Graph Theory focuses on problem solving using the most important notions of graph theory with an in-depth study of concepts on the applications in the field of computer science. This course provides an in-depth understanding of Graphs and fundamental principles and models underlying the theory and algorithms. Emerging applications of Graph Theory in Computer Science domain will be covered for significant impact. Through this subject students will have intimate knowledge about how the graph theory play an important role to solve the technology driven and research oriented problems. It is a shot in the arm for the students who pursue higher studies in Computer Science as well as those who work for companies working in EDA, traffic simulation etc.
619	Design And Analysis Of Algorithms	MCAP2101	Skill development to design and analysis of algorithms.
620	Data Communication And Computer Network	MCAP2102	Employability in the field of computer networking.
621	Database Management Systems Ii	MCAP2103	Employability in the field of database applications.
622	Operating System	MCAP2104	Skill development in the field of system administration.
623	Algorithm Lab	MCAP2111	Skill development to understand the algorithm.
624	Unix And Network Programming Lab	MCAP2112	Employability in the field of networking and understand the concept of UNIX operating system.
625	Dbms Ii Lab	MCAP2113	Employability through familiarizing with PL/SQL programming including stored procedures, stored functions.
626	Software Engineering	MCAP2201	Entrepreneurship for design, development and implementation of software based on requirements.
627	Web Technology	MCAP2202	Employability in the process of understanding the concept of Web Technologies along with applications.
628	Computer Graphics	MCAP2203	Skill development to understand the detail of Computer Graphics.
629	Intelligent Systems	MCAP2204	Skill development to gather and analyze data and communicate with other system.
630	Software Engineering Lab	MCAP2211	Entrepreneurship for developing a quality software for customer as per requirements.
631	Web Technology Lab	MCAP2212	Employability for developing the web pages using HTML, CSS, JavaScript, XML, PHP with SQL for database connectivity
632	Graphics Lab	MCAP2213	Employability in the field of Graphic designing.
633	Power Plant Engineering	MECH4101	Employability & Skill Development - Coal based thermal power plant, Hydroelectric power plant, Nuclear Power plant are taught in this subject which are very core knowledge in Mechanical Engineering and key to employment in Power Sector.
634	Advanced Manufacturing Technology	MECH4102	Employability & Skill Development - This subject enhance in precision manufacturing by smart technological systems, lowers error rates and product failures, overall reducing huge costs historically faced by manufacturers.
635	Operations Research	MECH4103	Employability & Skill Development - Understanding and acquiring the knowledge for problem solving & decision making from various alternatives from a large number of constraints must be learned by the students for selecting the least risk with an optimum plan in the current business scenario.
636	IC Engine Lab	MECH4111	Employability & Skill Development - Practical knowledge on (i) working principle of IC engines with their operational characteristics and (ii) various components like valves, fuel injectors etc. will be an added advantage for students working in automotive industries.
637	Machining & Machine Tools Lab	MECH4112	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools like lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various components. This skill will help students to select/ design/ maintain machine tools in an industry.
638	Industrial Training Evaluation	MECH4131	Employability & Skill Development - Get an idea of industrial set up and its associated complexity, evaluate the classroom knowledge against the real life application, learn the sequence of activities that lead to a finished product from the raw material and learn about activities other than design and manufacturing that are necessary for producing the goods and services.
639	Computational Methods in Engineering	MECH4142	Employability & Skill Development - Different numerical methods and its application on engineering are learned and apply them in R&D sector or research
640	Quantity Production Method	MECH4143	Employability & Skill Development - More than 60% of the manufacturing Industries have restructured their factories or the manufacturing systems to become lean producers (less wastages) , making goods of superior quality ,cheaper, faster in a flexible way.Students should be well versed on the same & to be responsive in their respective Industrial environment.
641	Computational Fluid Dynamics	MECH4144	Employability & Skill Development - Students will get job opportunities in various emerging technologies including R&D sectors.
642	Quantitative Decision Making	MECH4181	Entrepreneurship : Understand the meaning and appreciate importance of Quantitative Decision Making.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
643	Project I	MECH4191	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.
644	Advanced Manufacturing Lab	MECH4211	Employability & Skill Development - Students program and run most advanced CNC Lathe, Electro Discharge Machine and Robot. They will be in a position to successfully run such machines present in modern industries.
645	Design of an Industrial Product	MECH4221	Employability & Skill Development - Develop manufacturing drawings of the components and General Assembly drawing of the complete product/ system along with its Bill of Material and this very much helpful for direct employability.
646	Comprehensive Viva Voce	MECH4231	Employability & Skill Development - This will be an evaluation of the student's overall mechanical engineering concept and ability to grasp all the 8 semester courses undertaken by the student and it is directly helpful for employability.
647	Mechanical Handling of Materials	MECH4281	Employability : To Interpret the importance of materials handling
648	Aerodynamics	MECH4282	Employability : to Learn fundamental physical and analytical principles of aerodynamics, Apply the knowledge of aerodynamics in design of turbo-machine blades, vehicles etc
649	Project II	MECH4291	Employability & Skill Development - Design engineering solutions to complex problems utilizing a system approach or design experimental set up or conduct literature survey for analytical models. Prepare manufacturing drawings to show design outcome for a product/ experimental set up or assimilation of knowledge for developing analytical models. Communicate with engineers and the community at large in written and oral forms.
650	Energy Management and Audit	REEN6101	Employability & Skill Development - Student can learn a systematic, one-time procedure and a long-term strategy dedicated to continuous improvement and energy efficiency. They can learn the methodology of energy audit process and its classification. Student can also classify industry from energy consumption aspect.
651	Renewable Energy III	REEN6102	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
652	Renewable Energy Laboratory	REEN6111	Employability & Skill Development - Students will learn the skill to handle equipment that can produce and measure renewable energy from sun, wind and biomass.
653	Energy Transmission Technology	REEN6141	Employability & Skill Development - Student will learn how energy transmitted over long and short distance. They will also understand the power grid management. Student will learn how renewable power can be fed to the grid
654	Energy Trading and Pricing	REEN6142	Employability & Skill Development - Student can learn about energy market organisation and design. They can get an exposure on how energy is traded globally and how it is priced



Mapping of courses to employability / entrepreneurship / skill development for the year 2016-17			
Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	Micro-Electronic Devices and Circuits	AEIE5101	Employability & Skill Development - Detail analysis Op-Amp circuits to understand loading effects in application circuits. Select MOS transistor as per datasheet parameters to design a simple current mirror. Analyze the DC performance of single-stage analog amplifiers containing these circuit elements. Compute terminal voltage and current characteristics for MOS transistors under a variety of conditions.
2	Digital Signals and Systems	AEIE5102	Employability & Skill Development - Design digital FIR and IIR filters according to the given specification. Realize decimator, interpolator and filter banks using multirate signal processing algorithms. Calculate ensemble averages, joint moments, linear mean square estimation; ensemble averages, autocorrelation Matrices, ergodicity, power spectrum, Response of linear systems to random input.
3	Advanced Industrial Instrumentation	AEIE5103	Employability & Skill Development - Apply the measurement and analysis techniques of different polluting gasses produced by thermal power plant. Know the operation and control of distillation column. Apply the instruments needs for safety purpose of different hazardous area of the plant.
4	Process Instrumentation LAB	AEIE5111	Employability & Skill Development - Understand the activity and importance of Boiler Drum in an industry. Calibrate and test the instruments. Simulate, tune and control different processes. Understand principle of modeling and control through experiments.
5	Digital Signal Processing LAB	AEIE5112	Employability & Skill Development - MATLAB programs to determine time domain properties of the discrete time signals. Determine FFT and DFT of a discrete time signal. Design and implement FIR and IIR digital filters in MATLAB. Implement real time FIR and IIR digital filters and FFT algorithm using DSP kit like C6713 DSK.
6	Seminar-I	AEIE5121	Employability & Skill Development - The seminar should be on any topic having relevance with Instrumentation engineering and related areas of technology. Seminar work shall be in the form of presentation to be delivered regularly throughout the semester.
7	Mechatronics	AEIE5131	Employability & Skill Development - Integrate mechanical, electronics, control and computer engineering to model mechatronic systems. The complete design building, interfacing and actuation of a mechatronic system for a set of specifications. Learn different types of interface buses, communication networks, A/D conversions, DAS, data recording and logging etc required for mechatronic systems.
8	Measurement and System Design	AEIE5132	Employability & Skill Development - Formulate the structure of generalized measurement system. Develop the mathematical model of any measuring instrument. Calibrate and give specification of any measurement system. Analyze the measurement data.
9	Optical Instrumentation	AEIE5133	Employability & Skill Development - Learn the techniques of communications using optical fiber. Learn the structures and performance of photo detectors (like photo diode, PIN diode, APD etc). Explain the techniques of measurement of distance, length, velocity, acceleration, current, voltage using laser. Acquire knowledge on basic principle of holography and its uses in different fields such as nondestructive testing, medical field etc.
10	Process Control System Design	AEIE5201	Employability & Skill Development - Process mathematical modeling and study the techniques of modeling. Understand the process dynamics in general and analyze it in few industrial applications. Design process control system applying different linear, non-linear and soft-computing techniques. Employ proper system identification technique to identify unknown system and acquire knowledge of computer control.
11	Micro Sensor Science and Technology	AEIE5202	Employability & Skill Development - Apply the concepts of IC fabrication in sensor as well as semiconductor technology. Understand the micromachining processes (Bulk/ Surface /LIGA) and fabrication steps viz. deposition (CVD, Stuttering/ epitaxy, ion implantation etc.), lithography, etching (dry/wet, RIE/ DRIE) of micro-sensors. Understand the packaging/ testing of microsensors along with signal conditioning circuitry in real time systems. Analyze the application of smart sensors in IoT and medical/ aro-space/telecommunication/ instrumentation fields.
12	Instrumental Methods of Analysis	AEIE5203	Employability & Skill Development - Different spectroscopic methods and understand their use. Identify different components of spectrometers and acquire knowledge about their functioning. State the fundamental properties of different types of chromatography and able explain their working principle and application. Give comprehensive idea about Electron microscopy.
13	Embedded Systems	AEIE5204	Employability & Skill Development - Learn the architecture of AVR microcontrollers and develop embedded systems using it. Demonstrate working knowledge of embedded systems software with Linux and Python. Complete design of an embedded system with functional requirements for hardware and software components including processor, networking components and sensors, along with applications, subsystem interfaces and middleware.
14	Embedded Systems LAB	AEIE5211	Employability & Skill Development - Interface a sensor with microcontroller and monitor its input by displaying the measured value in LCD or PC. Implement PWM, FIR filter using PIC or ARM microcontrollers.
15	Virtual Instrumentation LAB	AEIE5212	Employability & Skill Development - Handle the LabVIEW software for signal analysis. 2. Study and analyze time and frequency response of process model. 3. Acquire real time signal for processing and control. 4. Check stability by applying different stability criterion.
16	Seminar-II	AEIE5221	Employability & Skill Development - Enhance presentation and communication skill. Gain information on latest technological developments related to instrumentation, control, communication and other relevant areas related to instrumentation engineering. Carry out literature survey and find out research problems.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
17	Digital Image Processing	AEIE5231	Employability & Skill Development - Learn how images are formed, sampled, quantized and represented digitally and processed by discrete, linear, time-invariant systems. Apply transformation algorithms such as DFT, DCT, Discrete Sine, Walsh, Hadamard, Slant, Haar, KLT, SVD and Wavelet transform to any given image. Compress a given image by applying lossy and loss less image coding techniques. Perform image enhancement, restoration, morphological operation and segmentation of a given image. Analyze a given image by extracting features from it and by using object recognition techniques.
18	Industrial Automation Technology	AEIE5232	Employability & Skill Development - Human Machine Interface: Operator & Engineering Interface – Features, Functions and Requirements. Trends & Practices: Computer Integrated Manufacturing/Processing, Management Information Systems; Safety Instrumented Systems (SIS) – Risk analysis and reduction methods, SIF & SIL considerations, IEC 61508 requirements; Wireless Communication – Remote Networks, LAN, HART.
19	Statistical and Bio-signal Processing	AEIE5233	Employability & Skill Development - Case study-I: Application to biomedical signals: Analysis of continuous EEG signals, Single channel analysis; Multiple channel analysis: Mapping; Elimination of artifacts; sleep EEG analysis. Case study-II: Application to biomedical signals: Analysis of continuous ECG signals: Measurements, Processing of ECG, Artifact removal, Statistical methods and models for ECG; Heart rate variability: Time-domain methods of HRV analysis; Frequency-domain methods of HRV analysis.
20	Chemistry I	CHEM1001	Employability & Skill Development - Understanding the operating principles and reaction involved in batteries and fuel cells and their application. Knowledge of synthesizing Nanomaterials and their applications in industry, carbon nano tube technology is used in every industry now-a-days. Ability of synthesizing bio fuels as a renewable and environment friendly alternative source for natural fuel. To understand chemical compositions and reactions is very much essential for mechanical equipment and instruments for their stability and life. This subject is important for this purpose and in industry it has wide applications.
21	Chemistry I Lab	CHEM1011	Employability & Skill Development - Chemistry teaches useful skills. Because it is a science, learning chemistry means learning how to be objective and how to reason and solve problems. Helps you to understand current events, including news about petroleum, product recalls, pollution, the environment and technological advances. The students will be able to determine the alkalinity, chloride ion present and total hardness and amount of calcium and magnesium in a given water sample. Able to develop titration skill.
22	Introduction to Computing	CSEN1201	Employability & Skill Development - It gives the basic knowledge of programming, teaches how to write loops, use pointers in C, in short teaches for the first time how to code in procedural programming language. It is basically the bread and butter of a computer science engineer.
23	Introduction to Computing Lab	CSEN1211	Employability & Skill Development - Teaches them the basics of programming from scratch using C. So this is the single most important subject who chooses a programmer's job in life, and the majority of the students choose to do so.
24	Algorithms and Complexity	CSEN5102	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement implementing complex algorithms and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
25	Advanced Database Management Systems	CSEN5103	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend is benefitted by this course. They also get the knowledge and concept of distributive database and their working principle, which is very much required in today's jobs requiring distributed implementation of the software.
26	Advanced Programming and Problem Solving	CSEN5104	Employability & Skill Development - It gives the advanced knowledge of programming, in short teaches for the first time how to code in procedural programming language. It is basically the bread and butter of a computer science engineer.
27	Advanced Computer Architecture	CSEN5105	Employability & Skill Development - This advanced course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
28	Database Management Systems Lab	CSEN5113	Employability & Skill Development - This gives a hands-on chance to write queries and learn the different commands that a Database Administrator (DBA) needs to execute and hence helps jobs of becoming a DBA. Also an advanced knowledge of this is required for groups writing a banking software or an ERP software.
29	Advanced Programming and Problem Solving Lab	CSEN5114	Employability & Skill Development - Teaches them the advanced concepts of programming. So this is the single most important subject for those who choose a programmer's job in life, and the majority of the students choose to do so.
30	Seminar I	CSEN5197	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry. It also gives an exposure to the latest research domains that they are going to explore in depth during their final year projects.
31	Theory of Computation	CSEN5201	Employability & Skill Development - This is an advanced course that teaches the students the underlying theory of computation - what can be computed and what not. The jobs that has the requirement of building new compiler for a new language or capture an input from the user pertaining to a specific regular expression must need this knowledge.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
32	Advanced Operating Systems	CSEN5202	Employability & Skill Development - Anybody working at the system level in the industry need this course. Also those who work the application layer also need to have a solid idea how the operating system operates at the backend in order make the implementation efficient. Not only these, they get the advanced knowledge of Real time OS and Distributive OS also that help in getting jobs in companies building those OS.
33	Advanced Computer Networks	CSEN5203	Employability & Skill Development - Anybody working in a networking company, like a internet service provider, a mobile service provider, a company that builds networking hardware like CISCO or write networking software for other third party vendors need such an advanced course.
34	Operating Systems Laboratory	CSEN5212	Employability & Skill Development - A must course for students who look for jobs as a system administrator and or developers that need advanced system level knowledge.
35	Computer Networks Laboratory	CSEN5213	Employability & Skill Development - It complements the theory course in networking and helps the students to become confident with the basic hardware and software required to be handled in a company that needs to manage an advanced network.
36	Term Paper Leading to Thesis	CSEN5214	Employability & Skill Development - It helps the students to write a proper technical documentation or manual on which they are working.
37	Basic Electronics Engineering	ECEN1001	Employability/Entrepreneurship- Analysing various electronic circuits and devices. Design different application specific circuits associated with diodes operating both in forward and reverse bias. Analyze various biasing configurations of Bipolar Junction Transistor and categorize different biasing circuits based on stability. Design and implement various practical purpose electronic circuits and systems meant for both special purpose and general purpose and analyze their performance depending on the type of required output and subsequently the applied input.
38	Basic Electronics Laboratory	ECEN1011	Employability & Skill Development - Familiarisation with passive and active electronic components such as Resistors, Inductors, Capacitors, Diodes, Transistors (BJT) and electronic equipment like DC power supplies, Multimeters, CRO, Signal generators etc. Determine and study the characteristics of different electronic components (diode, transistors, OP AMP etc) through circuitry. Handling of devices, biasing properly, plotting graphs to understand behaviour of devices, handling of instruments to measure parameters.
39	Advanced Digital communication	ECEN5101	Employability & Skill Development - Students will learn about the transmission techniques, synchronization in digital communication. They will know about the modulation schemes, OFDM etc. The students will acquire knowledge about the CDMA in details. The students will have clear idea about estimation and detection schemes. They will be able to design reliable channel codings. They will understand the differences between coding schemes. The students will be able to analyse the digital communication quality enhancing their employability in Communication Industry
40	Advanced Digital Signal Processing	ECEN5102	Employability & Skill Development - Students will know about the different transforms applied in signal processing. They will have knowledge about LTI systems, Digital filters. The students will know about multi- rate processing, wavelet transforms. They will solve problems on FFT and DFT. The students will know about the comparison of filters. They will be able to apply the knowledge of wavelets in developing advance systems leading to start up opportunities and entrepreneurship
41	Advanced Microwave Communication	ECEN5103	Employability & Skill Development - Students will be able to Identify high frequency electromagnetic wave propagation characteristics through guided media. They will be able to analyze microwave passive components and circuits. Students should be able to enhance their knowledge on semiconductor and vacuum tube devices operating at high frequency. They will be able to design high frequency filters and amplifiers. Such knowledge ensures enhancement in employability of students.
42	Advanced Communication Laboratory	ECEN5111	Employability & Skill Development - The students will be able to measure radio parameters. They will perform data communication using optical fiber and will use Smith's chart for microwave measurements enhancing their employability
43	Design and Simulation of Communication Systems Laboratory	ECEN5112	Employability & Skill Development - Students will be able to Design graphical user interfaced models of various communication systems/ subsystems with the help of suitable advanced software e.g. MATLAB/ OCTAVE/LABVIEW/ NS/ PUFF/ IE3D/ ANSOFT/ HFSS/ CST/ QUALNET/ MICROWAVE OFFICE etc. for detailed study of their operating principle and their performance vis-a-vis practical limitations like, channel bandwidth, noise, attenuation etc. Hence enhances their employability
44	Advanced Computer Communication & Networking	ECEN5131	Employability & Skill Development - Students will be able to apply the basic taxonomy and terminology of the computer networking area. They will be able to Identify the different types of network devices and their functions within a network. Understand internetworking principles, routing principles and algorithms such as IP, IPv6, distance vector, and link state. Students will be able to gain expertise in some specific areas of networking such as the design and maintenance of individual networks. Such knowledge helps in skill development of students seeking carrier in Network Security and communication.
45	Telecommunication Systems & Engineering	ECEN5132	Employability & Skill Development - Students will know about the different telephone networks, ADSL etc. They will have knowledge about digital telephone systems and local area networks- features and parameters. The students will be aware of ISDN and its operation. They will be able to calculate the efficiency of a tel network. They will know about the various 802.11 standards and their applications. They will know about ATM operation and ATM networks leading to skill development for communication Industry.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
46	Statistical Communication	ECEN5133	Employability & Skill Development - Students will know about the different matrices and filters used in communication systems. They will have knowledge about modeling of signals. The students will know about techniques of detection. The students will be able to differentiate between filters. They will learn about signal properties and processes. The students will learn about stochastic models for possible application and hence help in skill development.
47	Remote sensing techniques and application	ECEN5135	Employability & Skill Development - The students will know and understand solar activity, the features of radiation pattern, study of meters and study of spectroscopy and its importance. Such knowledge will enhance employability of students
48	Basic Electrical Engineering	ELEC1001	Employability/Entrepreneurship- Analysing various electrical circuits and machines. Operate DC Machines and analyze Starters and speed control of DC motors. Analyze single and three phase AC circuits. Know the operation of single phase transformers and three phase induction motors.
49	Basic Electronics Engineering Lab	ELEC1011	Employability/Entrepreneurship- Analysing various electronic circuits and devices. Familiarisation with passive and active electronic components such as Resistors, Inductors, Capacitors, Diodes, Transistors (BJT) and electronic equipment like DC power supplies, Multimeters, CRO, Signal generators etc. Determine and study the characteristics of different electronic components (diode, transistors, OP AMP etc) through circuitry.
50	Business English	HMTS1101	Employability & Skill Development - It helps the students to communicate effectively in english that helps in all possible job interviews they face. Organizational Communication: Agenda & minutes of a meeting, notice, memo, circular, Project Proposal, Technical Report Writing, Organizing e-mail messages, E-mail etiquette, Tips for e-mail effectiveness and Levels or Channels of Communication.
51	Language Practice Lab (Level 1)	HMTS1111	Employability & Skill Development - This is a highly essential paper for learning effective oral communications and also develops the listening skills that are very much required in the industry. Learn Voice Modulation, Accent training. Conversational Skills/Spoken Skills Writing with a purpose---Convincing skill, argumentative skill/negotiating Skill (These skills will be repeated in oral skills). Writing reports/essays/articles---logical organization of thoughts.
52	Co-curricular Activities	HMTS1121	Employability & Skill Development - This course aims at instilling a sense of social responsibility. This objective can be achieved by bringing in awareness about the contemporary issues relevant to the GenX and Gen Y through enlightened discussions and active participation.
53	Mathematics I	MATH1101	Employability & Skill Development - The concepts Linear algebra that is given helps in all jobs that uses Machine Learning. Apart from that, the knowledge of Calculus helps all students who choose their carrier in the domain of Image Processing. Apply the concept of rank of matrices to find the solution of a system of linear simultaneous equations. Engineers are able to apply the concept of differentiation and integration for functions of multi variables with their applications. Able to combine the concepts of gradient, curl, divergence, directional derivatives, line integrals, surface integrals and volume integrals to solve different engineering problems.
54	Mathematics II	MATH1201	Employability & Skill Development - The basics of Graph Theory that is introduced here is a must for all the engineers that get employed in any of the knowledge-based industries. Also a whole lot of students go for companies working in map-based algorithms like Mapline, Uber, OLA etc. for whom this is a must course. Construct differential equation as a mathematical model of physical systems. Apply basic graph algorithms for searching and finding minimal spanning tree and shortest path. Evaluate distance, angle between planes and shortest distance between two skew lines in three dimension.
55	Advanced Mathematical Methods	MATH5101	Employability & Skill Development - Model and solve non-constrained and constrained optimization problems by classical optimization techniques. Model and solve engineering optimization problems using different algorithms.
56	Advanced Discrete Mathematics	MATH5101	Employability & Skill Development - The portion that deals with Advanced Number Theory introduces to the students for the underlying Mathematics that they ultimately use in a group/company working on Cryptography or Data Security. Also the other things that are taught like Logic is essential for anybody working in the industry, whatever be the domain.
57	Advanced Mathematics	MATH5103	Employability & Skill Development - Students will be able to describe the way of writing mathematical model for real-world optimization problems. They will be able to Identify Linear Programming Problems and their solution techniques. They will be able to categorize Transportation and Assignment problems. Students will be able to apply the way in which Game Theoretic Models can be useful to a variety of real-world scenarios in economics and in other areas. They will be able to convert practical situations into non-linear programming problems. They will be able to solve unconstrained and constrained programming problems using analytical techniques. Hence the knowledge acquired through this course helps in developing skill sets for better employability
58	Workshop Practice	MECH1011	Employability & Skill Development - Hands on training on machining exposure (Lathe, shapping, milling, drilling etc) and manufacring procedures (Casting, welding etc.) are helpful for direct bearing on employability. Making of a wooden pattern, a matched profile form MS plate and an internal and external thread. Making of a green sand mould using the pattern made; stepped pin in a centre lathe. Making of square prism from a round shaft by Shaping Machine and square prism from a round shaft by Milling Machine. Arc Welding practice and making of a welded joint. Sheet Metal forming & Brazing

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
59	Engineering Drawing	MECH1012	Employability & Skill Development - Acquaintance with different drafting equipment & accessories; Gain the concept of scale of drawing. The concept and skill of different types of projections of engineering drawing is practiced. Engineering drawing is the essential language to the engineers and this course help the students to develop themselves as an designer which is very much essential for employability.
60	Engineering Mechanics	MECH1101	Skill developed to draw free body diagram of a system under equilibrium / non equilibrium along with the consideration of frictional forces. Able to perform engineering design calculations and able to analyze dynamic systems. Basic concepts of Engineering Mechanics directly and indirectly help the design process in the industrial products and in personal life.
61	Engineering Thermodynamics and Fluid Mechanics	MECH1201	Employability & Skill Development - Measurement of fluid pressure: Piezometer, Manometers -Simple and Differential U-tube manometer, Inverted tube manometer, Inclined tube manometer. Application of Bernoulli's equation-problem on pipe line. Measurement of flow rate: Venturimeter and orificemeter. Static pressure, Dynamic pressure, Stagnation pressure-measurement of velocity by Pitot tube.
62	Physics I	PHYS1001	Employability/Skill development for ability to think critically and Analyze the data. The syllabus covers the working principle of laser, and apply the knowledge in different lasing system and their engineering applications in holography. Imparting the essence and developing the knowledge of controlling distant object like satellite, data transfer through optical fiber, implication of laser technology, handling materials in terms of their electrical and magnetic properties etc. Some of the students do research in architectural aspects of Quantum Computing, for them the basics of Quantum Mechanics that are introduced here is essential. Also the portion of optics that specifically deals with fibre optics helps the students in the related industries.
63	Physics I Lab	PHYS1011	Employability/Skill development for ability to think critically and Analyze the law of nature. To gain practical knowledge by applying the experimental methods to correlate with the Physics theory. To learn the usage of electrical and optical systems for various measurements. Apply the analytical techniques and graphical analysis to the experimental data. Understand measurement technology, usage of new instruments and real time applications in engineering studies. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group.
64	VLSI Device & Modelling	VLSI5101	Employability & Skill Development - Students will learn BJT, MOSFET Modeling, Short Channel Effect, MOS Scaling and Industry Standard Compact Modeling which will enhance their employability and skill development
65	Digital IC Design	VLSI5102	Employability & Skill Development - Students will learn CMOS Circuit Design, Layout Design, VLSI Design Methodology, HDL Coding, EDA Logic Synthesis and P & R flow which will enable their employability and skill development
66	Microelectronic Technology & IC Fabrication	VLSI5103	Employability & Skill Development - Students will learn various fabrication steps and methods of basic and advanced Technology which will enhance their Skill development
67	VLSI Frontend Design & CAD Tools	VLSI5111	Employability & Skill Development - Students will do hands on practice on Industry Standard Xilinx Vivado Simulator, VHDL coding and Simulation/Verification, Finite State Machine coding using HDL, Test Bench HDL coding for RTL Verification, FPGA synthesis, Place & Route and Hardware Programming, ARM Cortex based Software/Hardware which will enable their employability and skill development
68	VLSI Backend Design & Technology CAD Tools	VLSI5112	Employability & Skill Development - Students will do hands on practice on Industry Standard Cadence Virtuoso Schematic editor, Spectra Circuit Simulation, Layout Edit and Verifications, Pre Layout and Post Layout Simulation and Analysis which will enable their employability and skill development
69	Embedded Systems	VLSI5131	Employability & Skill Development - Students will learn Embedded System Design Methodology, Micro controller Design, Embedded Memory Architecture and I/O Configuration which will enhance their employability and skill development
70	Digital Communication Technology	VLSI5132	Employability & Skill Development - Students will learn baseband digital signal transmission (PCM DM ADM ADPCM), Digital Modulation (BPSK DPSK QPSK etc), Multiplexing and multiple access (TDM/TDMA FDM/FDMA ALOHA CSMA CSMA-CD etc), Optimum Detection and Estimation techniques which will enhance their employability and skill development
71	VLSI Processor Architecture	VLSI5201	Employability & Skill Development - Students will learn instruction set architecture (ISA), CISC and RISC Architecture, DSP Processor Architecture, Accelerator, Multi-Threaded Processor, Processor cores in SOC Design which will enhance their employability and skill development
72	VLSI Design, Verification and Testing	VLSI5202	Employability & Skill Development - Students will learn embedded Memory Design in VLSI Chip, VLSI Interconnect Design, Industry Standard STA (Static Timing Analysis) Method, Set-up and hold Checks for Timing Verification, process variation and Clock skew concepts and Si Testing/Debug Methods which will enable their employability and skill development
73	Analog IC Design	VLSI5203	Employability & Skill Development - Students will learn MOS-based analog VLSI sub-circuits, relevant small-signal equivalent circuit models, they will learn basic concepts in RF design and the geometry, models of passive devices used in the RFIC, they will learn data converters, switched-capacitor circuits, operation of the oscillator circuits. All these learnings will enhance their employability and skill development

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
74	Analog VLSI Design Laboratory	VLSI5213	Employability & Skill Development - Students will do hands on practice on Analog VLSI sub-circuits and amplifier circuits, layout for analog VLSI sub-circuits and circuits, special circuits namely data converters, practical switched-capacitor circuits which will enhance their employability and skill development
75	Advanced Micro & Nano Devices	VLSI5231	Employability & Skill Development - Students will learn various leakage phenomena in advanced MOS, High K Plus Metal Gate Technology, SOI MOS device, FinFET Devices like DGMOS, Tri-gate, Hetero-Structures, CNT, Graphene Device which will enhance their employability and skill development.
76	DSP Algorithms for VLSI System Design	VLSI5232	Employability & Skill Development - Students will learn DSP Algorithm, Signal and Data Flow Graph, Pipeline and Parallel Processing, SISO, MIMO System which will enable their employability and Skill Development
77	Low Power VLSI Circuit and System	VLSI5241	Employability & Skill Development - Students will learn CMOS Dynamic Power Dissipation & Reduction Techniques, CMOS Standby (leakage) Power Dissipation & Reduction Techniques, Short Circuit Power Reduction Techniques, Embedded Memory Power Reduction Techniques, System and Architecture level Power Reduction Techniques which will enable their employability and skill development
78	Sensors	VLSI5242	Employability & Skill Development - Students will learn Physical and Chemical Sensors, Numerical modeling techniques, Sensor Fabrication Technology, MEMS materials and nano-fabrication methods which will enhance their skill development
79	Analog Electronics	AEIE2101	Employability & Skill Development - Design and analyze BJT amplifiers for small and large signal. Design and compare between different types of Oscillators to meet the specified needs with appropriate consideration. Design, analyze and understand the application of different types of multivibrators with and without IC 555. Analyze and design analog electronic circuits using discrete components with specified needs for the betterment of human living.
80	Circuit Theory and Networks	AEIE2102	Employability & Skill Development - Identify, formulate, and solve engineering problems in the area circuits and systems. Acquire skills in analyzing electrical measuring devices, analog electronic circuits, power electronic circuits. Analyze and synthesize RL, RC and RLC networks. Design an electric system, components or process to meet desired needs within realistic constraints.
81	Analog Electronics Lab	AEIE2111	Employability & Skill Development - Set up testing strategies and select proper instruments. Design different kind of electronic circuits appropriately to obtain the best possible circuits that can be applied to any electronic systems. Practice different types of wiring and instruments connections keeping in mind technical, economical, safety issues. Evaluate the use of computer based analysis tools to review the performance of electronic circuit.
82	Circuits and Networks Lab	AEIE2112	Employability & Skill Development - Apply network theorems to analyze the experimental result using hardware circuits. Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
83	Digital Electronic Circuits	AEIE2201	Employability & Skill Development - Design and implement combinational logic circuits, sequential logic circuits. Describe the nomenclature and technology in the area of memory devices: ROM, RAM, PROM, PLD etc. and different kind of ADCs and DACs. Understand the basic electronics of logic circuits and be able to use integrated circuit packages.
84	Sensors and Transducers	AEIE2202	Employability & Skill Development - Measure various industrial variables such as temperature, pressure, level, flow etc. Understand the operational conditions, range and limitations of sensors and transducers. Understand the interfacing of the sensors with the electrical circuits in measuring and controlling devices. Use the sensors in IoT based applications.
85	Electrical Measurement and Instruments	AEIE2203	Employability & Skill Development - Measurement of resistance, inductance and capacitance. Localization of cable faults and calibration of instruments. Measurement of energy by single phase induction type meter. Construction and principle of operation of Permanent Magnet Moving coil, Moving iron, Dynamometer and Electrostatic type instruments.
86	Digital Electronic Circuits Lab	AEIE2211	Employability & Skill Development - Analyze and identify different components of digital electronic circuits. Design and implement combinational logic circuits, and sequential logic circuits. Develop necessary digital logic and apply it to solve real life problems keeping in mind technical, economical, safety issues.
87	Electrical Measurement Lab	AEIE2212	Employability & Skill Development - Measure energy using Single Phase A.C. energy meter and evaluate the unknown frequency of an A.C. supply using Wien Bridge. Determine the power using Instrument Transformer and apply the knowledge about the instruments to use them more effectively
88	Dissertation Part-I	AEIE6121	Employability & Skill Development - Dissertation should be on any topic having relevance with Instrumentation, Electrical or inter-disciplinary field of engineering. Dissertation should consist of research work done by the student in the selected topic with comprehensive and significant review of recent developments in the same field.
89	Micro-Electromechanical System design	AEIE6131	Employability & Skill Development - Design MEMS-based diaphragm type devices analytically. Fabricate the whole MEMS system with the help of simulation software. Develop micro-fluidic system for biomedical applications. Develop skill on engineering mechanics for micro-system design.
90	VLSI Technology	AEIE6132	Employability & Skill Development - Develop models of moderately sized CMOS circuits that realize specified digital functions. Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects. Learn VLSI design methodologies - the various steps and tools, the implementation choices, and good architecture practices.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
91	Robotics Engineering	AEIE6133	Employability & Skill Development - Solve basic robotic dynamics, path planning and control problems. Model robot links and joints and integrate sensor technology and other external devices into the robot system to design multilink flexible robot.
92	Applied Soft Computing	AEIE6141	Employability & Skill Development - Design and analyze the different components of fuzzy controller appropriately to obtain the best possible fuzzy controller that can be applied to any process control systems. Acquire knowledge of different ANN terminologies to apply in solving simple ANN problems. Illustrate biological background and give idea about basics of stochastic algorithm.
93	Wireless Sensor Networks	AEIE6142	Employability & Skill Development - Acquire knowledge of MAC protocols developed for WSN. Carry out simple analysis and planning of WSN. Apply routing protocols on the developed WSN. Work on some WSN standards, platforms and tools.
94	Remote Sensing	AEIE6143	Employability & Skill Development - Develop skills to address an environmental monitoring problem by selecting an appropriate remotely sensed data set and applying the relevant image analysis and interpretation techniques. Perform basic remote sensing image interpretation including spectral ratios, histogram stretching, filtering, supervised and unsupervised classification algorithms.
95	Medical Instrumentation	AEIE6151	Employability & Skill Development - Understand the physiology of biomedical systems and different methods in the design of biomedical instruments. Learn the different methods of medical imaging systems, concepts related to the operations and analysis of biomedical instruments. Apply it in the design of different assisting therapeutic and diagnostic medical devices.
96	Advanced Digital Control	AEIE6152	Employability & Skill Development - Principles for design of Digital Control system and will gain knowledge of implementing for industrial applications. Developing algorithms for applications based various digital controllers and analysis of discrete control systems using various time and frequency domain tools. Aware of advanced understanding of adaptive and self tuning principles and applications.
97	Nonlinear Control	AEIE6153	Employability & Skill Development - Feedback control, Control problems, Stabilization via linearization, Integral control, Integral control via linearization, Gain scheduling, Feedback linearization, Input-output linearization, Full-state linearization, State feedback control, Stabilization.
98	Post-Submission Defense of Dissertation	AEIE6221	Employability & Skill Development - Represent and communicate a project work very efficiently to the audience. Interpret experimental data and note down observations competently. Respond to all types of questions from audience based on their presentation topic.
99	Dissertation (Completion)	AEIE6222	Employability & Skill Development - Manifest themselves in industrial and research ambiances by growing skills and confidence. Solve, analyze and execute technical projects in specified time frame. Develop ethical and social responsibilities by fulfilling the needs of society for betterment of life and engage themselves in life-long learning. Develop confidence for self-learning attitude for <u>lifelong learning</u> .
100	Comprehensive Viva-Voce	AEIE6223	Employability & Skill Development - Appear interview elegantly and confidently. Judge themselves about their domain knowledge. Develop habits of learning.
101	Chemistry of Biomolecules	BIOT2101	skill development in spectroscopy, structural chemistry
102	Industrial Stoichiometry	BIOT2102	skill development in material and energy balance
103	Biochemistry	BIOT2103	skill development in analysis of biochemical pathways
104	Microbiology	BIOT2104	skill development in study of microbial life cycle and pathways
105	Thermodynamics & Kinetics	BIOT2201	skill development in kinetic mechanism of enzyme-substrate reactions
106	Transfer Operation-I	BIOT2202	skill development in transfer operations techniques
107	Molecular Biology	BIOT2203	skill development in molecular biology techniques and procedures
108	Industrial Microbiology & Enzyme Technology	BIOT2204	skill development in study of industrial enzymes and their industrial applications
109	Basic Environmental Engineering & Ecology	CHEM2001	Employability & Skill Development - It starts with basic concepts of ecology and concerns on environment. This subject discusses how the spiraling rate of population growth and the requirements of human beings have led to large-scale deforestation, depletion of the ozone layer, creation of greenhouse effect, acid rain, smog and environmental pollution. The Paper equips students to manage environment-related issues by showing how technology can be used to control these problems. Standards and control measures: Industrial, commercial and residential air quality standard, control measure (ESP, cyclone separator, bag house, catalytic converter, scrubber (ventury). Waste water treatment system, Noise pollution control. Energy audit, Green building, Green sources of energy, Concept of Green Chemistry, Green catalyst, Green solvents (replacement of VOC)
110	Mechanical Operation	CHEN2101	Employability & Skill Development - Students will be able to apply the concepts of screen analysis to select suitable screening equipment and method for a given screening operation. Students will be able to select appropriate size-reduction equipment for a given comminution operation and will be able to calculate the <u>power requirements for the operation</u> .
111	Energy Engineering	CHEN2103	Employability & Skill Development - Student can learn to characterized Solid, liquid and gaseous fuel. Acquire knowledge of different crude oil extraction process. Acquire knowledge on the processing of crude oil along with an estimation of <u>various value-added products</u> .
112	Industrial Stoichiometry	CHEN2104	Employability & Skill Development - The students will learn to apply knowledge base to identify dimensionless numbers given several correlated variables. They can acquire ability to handle elementary flow-sheeting given a specific process. they can also develop skills to identify recycle, bypass and purge points in a chemical process and perform <u>calculations with them</u> .

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
113	Energy lab	CHEN2111	Employability & Skill Development - The students will be able to understand the importance of quality control of the properties of different fuels during manufacturing and in applications and execution of the activities for implementing concept of Quality in the Refineries and fuel dealers' premises or R&D projects including the commercial operations in any business or industry operations of diverse nature.
114	Fluid Mechanics Lab	CHEN2112	Employability & Skill Development - The objective of this course is to impart working knowledge and develop skills of the students in fluid mechanics through bridging between the theoretical concepts and working practices for attaining the competency in practical applications or for working in the industry and conducting research & development activities.
115	Mechanical Operation Lab	CHEN2113	Employability & Skill Development - The objective of this course is to provide a hands-on idea on the mechanical devices that are essential in handling the material and it's processing in different chemical engineering related downstream applications.
116	Chemical Engineering Drawing Laboratory	CHEN2114	Employability & Skill Development - The objective of the course is to provide an elaborated concept of engineering drawing and idea on the relevant software for engineering drawing. Student can learn to use AutoCAD software for developing engineering drawing layouts and can prepare a virtual 3-D representation of an engineering equipment.
117	Process Heat Transfer	CHEN2201	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes.
118	Chemical Engineering Thermodynamics	CHEN2203	Employability & Skill Development - student can understand the process involving liquefaction, refrigeration and different power cycles. They can calculate thermodynamic efficiency of a process. They can also estimate thermodynamic properties of substances in gas or liquid state of ideal and real solution.
119	Heat Transfer lab	CHEN2211	Employability & Skill Development - The objective of this course is to provide the practical exposure to the students regarding the application of various heat transfer phenomenon and correlations in various engineering processes. Hands on experience will enable them to analyze working principles of various heat transfer devices including heat exchangers, condensers.
120	Surveying	CIVL2101	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Moreover, during execution, project of any magnitude is constructed along the lines and points established by surveying.
121	Strength of Materials	CIVL2102	Employability: Learn the fundamental tools and concepts involving mechanics to analyse and design structures. Forms the basic foundation in order to successfully learn the advanced structural engineering subjects.
122	Building Materials and Construction	CIVL2103	Employability: To assess the different types of materials and their qualities which are being used as construction materials like bricks, cement, sand, aggregates.
123	Engineering Geology	CIVL2104	Employability: To study and identify different types of rock and mineral on the basis of their physical and mechanical properties.
124	Strength of Materials Lab	CIVL2111	Employability: Apply the concepts derived from various experiments conducted to determine the various properties of metals at industrial site.
125	Engineering Geology Lab	CIVL2112	Employability: To understand the role of geology in the design and construction process of underground openings in rock. To apply geologic concepts and approaches on rock engineering projects. To identify and classify rock using basic geologic classification systems.
126	Building Planning and Drawing	CIVL2121	Employability: To study various aspects of engineering drawing like plan, elevation, section and apply them in them in the respective field work
127	CAD Lab	CIVL2122	Employability: CAD enables the development, modification, and optimization of the design process. CAD enables the development, modification, and optimization of the design process.
128	Analysis of Structures I	CIVL2201	Employability: To assess the forces that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
129	Soil Mechanics I	CIVL2202	Employability: To study the physical and mechanical properties of soil and to apply the knowledge for the solution of practical engineering problems.
130	Concrete Technology	CIVL2203	Employability: To learn various types and properties of cement, concrete and its widespread application.
131	Fluid Mechanics	CIVL2204	Employability: To learn fundamental concepts of fluid mechanics and apply the, in irrigation and water resource engineering
132	Fluid Mechanics Lab	CIVL2211	Employability: Understand the behaviour of fluid in various conditions using various experimental setups.
133	Surveying Practice	CIVL2212	Employability: The objective of surveying laboratory is to make student familiar and competent enough to draw map in suitable scale by using different surveying instruments like total station, theodolite, auto level, global positioning system (GPS), geographical information system (GIS), electromagnetic distance measurement (EDM).
134	Quantity Survey, Specification and Valuation	CIVL2221	Employability: Estimate the complete cost involved in the total planning, execution and construction of any project work. Extremely useful subject in respect to practical civil engineering is concerned.
135	Seminar I	CIVL2222	Entrepreneurship To express and present some technical matter in a lucid manner in front of the listeners who are technically sound and as well as not sound.



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
136	Data Structure and Basic Algorithms	CSEN2001	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real life problem which helps in employability. Learn about the data structures/ methods/ algorithms mentioned in the course with a comparative perspective so as to make use of the most appropriate data structure/method/algorithm in a program to enhance the efficiency (i.e. reduce the running time) or for better memory utilization, based on the priority of the implementation.
137	Data Structure and Basic Algorithms Lab	CSEN2011	Employability & Skill Development - Able to choose appropriate data structures and to design algorithms for a real time problem which helps in employability. Implementation of array operations, linked lists, stacks & queues using linked lists. Application of sorting and searching algorithms, Polynomial addition, Polynomial multiplication, Sparse Matrices, . Recursive and Nonrecursive traversal of Trees, Threaded binary tree traversal, DFS and BFS.
138	Data Structures & Algorithms	CSEN2101	Employability & Skill Development - Teaches the basics of Data Structure and also a few concepts of algorithms. For all the new-age companies that need a programmer to code new algorithms for them, this is a must course.
139	Discrete Mathematics	CSEN2102	Employability & Skill Development - The portion that deals with Number Theory introduces to the students for the first time what they ultimately use in a group/company working Cryptography or Data Security. Also the other things that are taught like Logic is essential for anybody working in the industry, whatever be the domain.
140	Object Oriented Programming	CSEN2103	Employability & Skill Development - It teaches a student the basics of OOP and to some extent gives the concept of OOD. It introduces both C++ and Java that is basically the main tool to make student survive in the market.
141	Data Structures & Algorithms Lab	CSEN2111	Employability & Skill Development - This reinforces the knowledge of the Data Structure with an hands-on experience to boost the confidence of the students.
142	Software Tools	CSEN2112	Employability & Skill Development - This is a course that can be rarely found in a typical CSE curriculum. It teaches the things that we typically use in the organizations that do serious software development like Makefile, purify, purecov, codecov etc. That how to write correct code and optimize the same. This course single-handedly differentiates our graduates from the computing departments of other schools.
143	Object Oriented Programming Lab	CSEN2113	Employability & Skill Development - It gives the hands-on training to code in OOPs, without which it is difficult to get a programming job anywhere in the world.
144	Design & Analysis of Algorithms	CSEN2201	Employability & Skill Development - This course gives the necessary training for all jobs that have a coding requirement and for Computer Science students more than 90% students will feel the necessity of attending this course at workplace.
145	Computer Organization	CSEN2203	Employability & Skill Development - This gives the basic idea how a computer works and also. Not only it is a requirement for those who work in hardware but also the Software Engineers need it as it teaches the principles based on which a computer can be used efficiently.
146	Data Structure and Database Concept	CSEN2206	Employability & Skill Development - Students can demonstrate an understanding of normalization theory and apply it to the normalization of a database. They will understand the concept of transactions and concurrency in database management and formulate solutions to a broad range of query problems using relational algebra and SQL.
147	Algorithm Implementation Lab	CSEN2211	Employability & Skill Development - The students learn how to translate an algorithm (which is a high level description of how to solve a problem) into a working code that works efficiently. The present day coding jobs eg. Amazon, Google, Microsoft etc. very much look for people with this expertise.
148	DBMS lab	CSEN2216	Employability & Skill Development - Student can apply DML component of Structured query language (SQL) for storing and modification of data in Oracle RDBMS system. they can apply DQL component of Structured query language (SQL) to construct complex queries for efficient retrieval of data from existing database as per the user requirement specifications. It is also possible to conceptualize and apply various P/L SQL concepts like cursor, trigger in creating database programs.
149	Software Engineering	CSEN6101	Employability & Skill Development - Any software engineer working in development project or maintenance project will need this advanced knowledge.
150	Thesis(Progress) and Seminar	CSEN6195	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to their working topic within the specified time, such a requirement arises very often in the industry.
151	Thesis(Final)	CSEN6295	Employability & Skill Development - It helps the students to write a proper technical documentation or manual on their work, which is very much required when they join a company. Most importantly they learn how to do research on a new topic on his own albeit with some guidance from his mentor. Those who go for higher studies get immensely benefitted from such an experience.
152	Thesis Viva-voce	CSEN6296	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present a technical topic logically, such a requirement arises very often in the industry.
153	Digital Electronics	ECEN2002	Employability & Skill Development - Design of Combinational circuits, registers and Counters, different types of A/D and D/A conversion techniques. the concept of Flip flops to analyze different memory systems will develop skill
154	Digital electronics Laboratory	ECEN2012	Employability & Skill Development - Realization of Combinational circuits, Counters, multiplexers will develop skill

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
155	Analog Circuits	ECEN2101	Employability & Skill Development - Understanding the concepts of electronic ckt operations, designing different types of oscillators and high gain amplifier ckt will enhance employability & develop skills.
156	Data Structure	ECEN2102	Employability & Skill Development - Development of an efficient program based on some algorithm will develop skill.
157	Signals and Systems	ECEN2103	Employability & Skill Development - Understanding how to categorize and identify the different types of signals and systems, analyzing the frequency domain characteristics of signals using mathematical tools, implementing and extending the concepts of transformation tools to design of communication systems and filters will enhance employability & develop skills.
158	Digital Logic	ECEN2104	Employability & Skill Development - Anybody joining the EDA industry or the semiconductor industry at large needs this course as a must.
159	Circuit Theory and Filters	ECEN2105	Employability & Skill Development - Understanding and analysing complex electrical circuits and applying mathematical tool to solve various network behaviour will enhance employability & develop skills.
160	Analog Circuits Laboratory	ECEN2111	Employability & Skill Development - Designing different electronic circuits and measuring circuit parameters will develop skill.
161	Data Structure Laboratory	ECEN2112	Employability & Skill Development - Learning to analyze run-time execution of sorting methods , implementing any ADT using both array based and linked-list based data structures, designing advance data structure using Non-Linear data structure and finding appropriate data structures as applied to specified problem definition will enhance employability & develop skills.
162	Signals and Systems Laboratory	ECEN2113	Employability & Skill Development - Learning signal synthesis using SA ,understanding signal operations and measuring filter responses will develop skill.
163	Digital Logic Lab	ECEN2114	Employability & Skill Development - Hands on experience that helps very much in the Electronic Design Automation (EDA) industry
164	Circuit and Network Theory Laboratory	ECEN2152	Employability & Skill Development - Obtaining the ability to apply MATLAB/OCTAVE for circuit analysis, analyzing two port network and designing different circuits will develop skill.
165	EM Theory & Transmission Lines	ECEN2201	Employability & Skill Development - Understanding of Electromagnetic wave propagation, different electromagnetic phenomena , design of Impedance Matching Networks for two wire Transmission Lines, analysis of the radiation characteristics of antenna configurations will increase the employability & develop skills
166	Analog Communication	ECEN2203	Employability & Skill Development - Knowledge of Modulation, time and frequency domain representations of signal, analysis of various multiplexing techniques and radio receivers will develop skill.
167	Solid State Devices	ECEN2204	Employability & Skill Development - Understanding of operations of solid state devices using relative position of Fermi energy levels across p-n junctions in devices, concepts of different hetero junctions in semiconductor devices will enhance skill.
168	EM Theory Laboratory	ECEN2211	Employability & Skill Development - study on radiation patterns of various types of antenna, SW pattern under different conditions will increase the employability & develop skills
169	Analog Communication Laboratory	ECEN2213	Employability & Skill Development - Hands on experience in design of modulators & demodulators, measurement of Radio receiver parameters will develop skill.
170	Photonics & Optical Communication	ECEN5201	Employability & Skill Development - Students will know about the different modes, devices, detectors, amplifiers using optical fiber communication. They will have knowledge about various types of systems with their strengths and weaknesses. The students will know about different types of optical networks. They will understand the requirements of repeaters and amplifiers and their parameters. The students will be able to choose type of fiber for typical applications. They will be able to integrate the fiber optics with other networks. Such knowledge will help them in getting placed in Communication industry.
171	Error Control and Coding	ECEN5202	Employability & Skill Development - The students will understand the importance of channel coding in data communication. They will learn about different techniques and will apply the correct one in a situation. They will be able to analyse the efficacy of different methods. This will enhance their employability.
172	Mobile Communication	ECEN5203	Employability & Skill Development - The students will understand the challenges of wireless and mobile communication. They will be able to analyse the factors like fading, SNR. The students should be able to explain the working of a cellular system- both GSM and CDMA. They will be able to analyse performance of cellular and other wireless networks enhancing their employability in communication industry and allied services
173	Communication systems Laboratory	ECEN5211	Employability & Skill Development - The students will be able to correlate different theories of wireless communication and fiber optics with practical experiments. They will understand operations of repeater station, GPS and GSM cellular systems. They will learn the procedures for testing radio parameters. Students will learn working of fiber optic links. Such knowledge will enhance their employability in Communication Industry.
174	Cryptography & network security	ECEN5231	Employability & Skill Development - Students will know about the basics and different standards used. They will have knowledge about important cryptography techniques. The students will know about algorithms applied for encryption. They will acquire knowledge about security challenges and some concepts in web security. The students will understand security systems using VPN and Firewalls. They will be able to develop new algorithms. Such skill sets will enhance their employability in all the IT companies.
175	Artificial intelligence & soft Computing	ECEN5232	Employability & Skill Development - They will have initial exposure to AI and its power. Processing of images and their application in various fields are taught so that they can apply in the relevant domains. Such skill sets will enhance their employability in all the IT companies.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
176	Integrated Circuits & Design	ECEN5233	Employability & Skill Development - The designing of chips is a hot topic. The students will learn and understand the devices, their characteristics. Then they will apply the knowledge to design ICs with different features. Such skill sets will enhance their employability in Rf Industry
177	Microwave measurement and Instrumentation	ECEN5234	Employability & Skill Development - Students will be able to analyse instruments like spectrum analyzer, Vector Network analyzer etc. They will be able to measure microwave power. They will acquire an Idea about techniques to measure power. They will develop the capability to analyse problem in measurement procedure. Such skill sets will enhance their employability in Rf Industry
178	Satellite communication	ECEN5241	Employability & Skill Development - Students will know about the orbits and different modules of a satellite. They will have knowledge about satellite links and various factors affecting the QOS of the links. The students will be able to explain the differences between TDMA, FDMA, DAMA etc. access techniques. They will be able to explain VSAT. GPS. The students will be able to analyse causes of interference and solution. They will understand GPS working. Such knowledge leads to enhancement in employability.
179	Image processing & pattern Recognition	ECEN5242	Employability & Skill Development - Students will know about the basics of image processing, spatial filtering etc. They will have knowledge about techniques applied for pattern recognition. The students will know about image clustering and face recognition. They will be able to classify and predict. The students will acquire knowledge about identifying objects correctly. They will earn the potential to develop new applications which facilitates entrepreneurship and supports the concept of self reliant nation
180	Multimedia communication	ECEN5243	Employability & Skill Development - Students will know about the different media classification, media characteristics. They will have knowledge about various types of compression coding and memory systems. The students will know about different architectures used and media modeling. They will learn about management of resources and project management. The students will be able to analyse synchronization problems. They will be producing films with confidence which indicates direct relation to employability
181	Advanced Antenna Engineering	ECEN5244	Employability & Skill Development - Students will come to know about Antenna – Radiation, VSWR, aperture and their importance, Types of antennae and antenna arrays including microstrip antenna, Testing principles of antennae, EMI and EMC and associated hazards, Different propagation phenomena and QoS of radio links and their analysis which in turn will enhance their Employability.
182	EMI/EMC	ECEN6131	Employability & Skill Development - Students will be able to Identify sources of EMI and understand coupling of electromagnetic signals leading to interference. They will be able to develop an ability to design EMI mitigation techniques. Students will be able to demonstrate EMI test method and its capabilities. Further they will be able to identify EMC requirements for electronic systems and understand EMC standards and its application. As such their chances of employability will increase.
183	Ad-hoc and Sensor Networking	ECEN6132	Employability & Skill Development - Students will be able to analyze a situation and interpret a data in ad hoc networks. Students will acquire knowledge to learn and apply modeling based approach through the extensive use of simulator tools. Students will be able to understand and develop ability to participate in research work. They will be able to apply suitable algorithm for a route. The students will understand the security requirements for networks enhancing employability of students.
184	Cognitive Radio Technology	ECEN6141	Employability & Skill Development - Students will develop an ability to analyze a performance in a radio net. They will develop an ability to learn and apply modular approach in design. They will Develop a passion to pursue next generation wireless communication. They will be able apply correct technique in locating radios in networks. This knowledge will help them in skill development for Communication Industry.
185	Design of Communication equipments and Systems	ECEN6142	Employability & Skill Development - Students will be able to apply knowledge in designing electronics for communication engineering. They will have the ability to learn and apply modelling based approach through the extensive use of simulation tools. They will be able to.Design of complex PCBs with Clear perception about testing of parameters. Consequently, they will be able to have their own start up supporting national vision of self reliant India.
186	Analog & Digital Electronic circuits	ELEC2101	Skill development / Entrepreneurship- Design and analyze Electronic circuits to meet the specified needs with appropriate consideration. Design and analyze various sequential circuits like synchronous and asynchronous counters, shift registers using flip flops. Entrepreneurship for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools
187	Circuit Theory	ELEC2102	Skill development in electrical technology by Imparting basic knowledge of electrical quantities such as current, voltage, power, energy and frequency to understand the impact of technology in a global and societal context. Identify, formulate, and solve engineering problems in the area circuits and systems, solve electrical circuits having both dependent and independent sources, analyze magnetically coupled circuits, use Laplace transform technique in solving electrical circuits. Design, analyze and synthesize filters.
188	Field Theory	ELEC2103	Skill development in electric field calculation, magnetic field calculation and propagation of electromagnetic wave through different medium
189	Analog & Digital Electronic circuit Lab	ELEC2111	Skill development for designing electronic products by learning the building blocks of analog and digital electronics through graphical, analytical and computer tools.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
190	Circuit Theory Lab	ELEC2112	Skill development in electrical engineering by acquainting the basic concepts and properties of electrical circuits.Design and analyze the frequency response of passive and active (LP, HP, BP, BR) filters. Design the RLC circuits to study the performance characteristics. Become proficient with computer skills (e.g., PSPICE and MATLAB) for the analysis and design of circuits.
191	Electric Machine-I	ELEC2201	Skill development on- Study of various operations of DC machines and Transformers
192	Electrical & Electronic Measurement	ELEC2202	Skill development in the field of measuring instruments (PMMC,MI & ED). Choose appropriate bridge for measurement of resistance, capacitance and inductance. acquire knowledge about various electronic and digital instruments like average reading AC voltmeters, peak reading AC voltmeters, true RMS voltmeter, electronic multi-meter, digital voltmeters.
193	Thermal Power Engineering	ELEC2203	Skill development in thermal power engineering. Acquiring knowledge about basic Concepts of thermodynamics, understanding the application of first and second law of thermodynamics, understanding the basics of thermal power generation and calculate the efficiencies of Rankine cycles with reheat and regeneration, acquiring knowledge of various types of boilers, turbines used in thermal power plants provides employability
194	Electrical Machine-I Lab.	ELEC2211	Employability/Entrepreneurship on various testing of DC machines and Transformer
195	Electrical & Electronic Measurement Lab.	ELEC2212	Skill development for measuring electrical parameters in efficient ways.
196	Thermal power Engineering Lab	ELEC2213	Employability & Skill Development - Thermal power engineering knowledge provides Employability
197	Human Values & Professional Ethics	HMTS2001	Employability & Skill Development - It helps a student to perform in an ethical matter which is obligatory for holding a position in the industry in the long run. Learn to apply ethical theories in the decision making process and follow the ethical code of conduct as formulated by institutions and organizations. Develop strategies to implement the principles of sustainable model of development.
198	Indian Culture and Heritage	HMTS2002	Employability & Skill Development - Learn about Ancient Indian Science & Technology with subtopics of Mathematics, Astronomy, Medicine and Architecture Technology. This course enables students to factor in human values and professional ethics in all of their activities in professional life. Students also apply their knowledge about variation of Indian culture & heritage.
199	Language Practice Lab (Level 2)	HMTS2011	Employability & Skill Development - It helps in all jobs as it enhance the language skills to communicate effectively. Develop different skills like Formal verbal communication, Presentation skills, Group Discussion, Job Application and Personal Interview.
200	Research Methodology and Project Management	HMTS6101	Employability & Skill Development - Students will be able to Understand research problem formulation. They will be able to analyze research related information, understand the ultimate importance of ideas, concept and creativity. they will also understand Importance of IPR for individuals and nations. Such knowledge definitely enhances skill development for research which is in alignment with Make in India concept.
201	Digital Electronics	INFO2101	Employability & Skill Development - Analyse and design of digital circuits to use them in IOT applications which helps in employability.
202	Computer Organization	INFO2102	Employability & Skill Development - Gain knowledge in internal working, structure and implementation of a computer system.
203	Digital Electronics & Computer Organization Laboratory	INFO2112	Employability & Skill Development - Aquired skill to simulate,synthesis and testing of digital circuits which helps in employability.
204	Switching Theory & Automata	INFO2201	Employability & Skill Development - Gain Knowledge in checking syntax,testing automation and natural language processing which helps in Employability.
205	Design & Analysis of Algorithms	INFO2202	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which create employability.
206	Information Theory & Coding	INFO2203	Employability & Skill Development - Attain the knowledge of information theory and direct applications of it over various real life problem.
207	Object Oriented Programming	INFO2204	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
208	Design & Analysis of Algorithms Laboratory	INFO2212	Employability & Skill Development - Acquired skill to design efficient algorithms for different applications which helps in employability.
209	Object Oriented Programming Laboratory	INFO2214	Employability & Skill Development - Attain Knowledge needed for employability through developing real life software.
210	Mathematical Methods	MATH2001	Employability for improvement of mathematical skills. Develop computational Synthesize components of a physical phenomenon and consequently construct a mathematical model of the system. Apply suitable analytic methods to solve wave equations, heat conduction equation.rstanding of second order differential equations with analytic coefficients along with Bessel and Legendre differential equations with their corresponding recurrence relations. Master how partial differentials equations can serve as models for physical processes such as vibrations, heat transfer etc.
211	Numerical and Statistical Methods	MATH2002	Employability & Skill Development - Analyzing certain algorithms, numerical techniques and iterative methods that are used for solving system of linear equations, implementing appropriate numerical methods for solving advanced engineering problems , applying the knowledge of matrices for reducing problems involving Science and Engineering, developing an understanding to reduce a matrix to its constituent parts in order to make certain subsequent calculations simpler and applying various optimization methods for solving realistic engineering problems will enhance skill.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
212	Numerical and Statistical Methods Lab	MATH2012	Employability & Skill Development - Solve problems based on Numerical Methods. Develop algorithms to handle large systems of equations appearing in physical and engineering problems. knowledge of C programming to find non-iterative exact solutions of a system of equations, ability of C programming to solve problems involving interpolation, implementation of algorithms in optimization problems will enhance skill
213	Probability & Numerical Methods	MATH2202	Employability & Skill Development - This is a must course whoever joins a job that requires the knowledge of Machine Learning or any part of Data Science at large.
214	Numerical Methods & Programming Lab	MATH2212	Employability & Skill Development - It gives a chance to the students to implement the numerical techniques that they learn in the corresponding theory paper. It helps them with any job that requires the skill of precision programming in Scientific Computing like the ones used in space science or missile technologies.
215	Applied Thermodynamics	MECH2101	Employability & Skill Development - This is a conceptual subject and the knowledge on this can be applied in various industrial as well as research field. <u>Students directly apply the knowledge in different thermal equipment.</u>
216	Strength of Materials	MECH2102	Employability & Skill Development - Fundamentals of Mechanics of Materials by studying the deformed behavior of structures (bar, beam, column) under various loading (axial, torsional, bending or combination of them) and boundary (statically determinate & indeterminate) conditions are introduced in this subject. Students will be able to apply the knowledge to analyse, select suitable material and calculate & predict stresses and deformations to a problem at hand and be a part of RnD team of a research institute or company.
217	Fluid Mechanics	MECH2103	Employability & Skill Development - The fundamentals of Fluid Mechanics including Fluid Statics and Fluid Dynamics are introduced through this subject. Students will be able to apply various fundamental relationships of Fluid Mechanics to analyse various system such as piping network having losses, pipe bends etc.
218	Engineering Materials	MECH2104	Employability & Skill Development - Detail knowledge of engineering materials and smart newly developed materials with their properties and application can be gathered and that can be applied in mining and manufacturing industry.
219	Metrology & Measurement	MECH2105	Employability & Skill Development - Students learn various techniques of measurement of dimensions, tolerances, surface finish, temperature, pressure, strain, stress etc and the instruments associated with such measurements. This is a vital skill in any manufacturing industry.
220	Machine Drawing – I	MECH2111	Employability & Skill Development - Basic concepts of Sketching, Editing, Modifying & Drafting tools of AutoCAD software are introduced and applied for Conversion (multi view to isometric & Isometric to multi-view), sectional view of solids & 2-D Assembly of part drawings along with dimensioning and conventions used. Students will be able to apply the concepts to read & drawing Assembly Drawings & Production Drawings prevalent in industry.
221	Applied Mechanics Lab	MECH2112	Employability & Skill Development - The knowledge and experiences of this lab will help students to determine different material properties (mechanical) through standard testing equipments and testing processes.
222	Workshop Practice – II	MECH2113	Employability & Skill Development - Hands on training in detailed on machining exposure (Lathe, shaping, milling, drilling etc) and manufacturing procedures (Casting, welding etc.) are helpful for direct bearing on employability.
223	Fluid Machinery	MECH2201	Employability & Skill Development - Students will be able to classify and describe different hydraulic machines, their components, functions, performance curves and use those parameters for selection of a device in practical industrial application.
224	Kinematics of Machines	MECH2202	Employability & Skill Development - Kinematic design and analysis is one of the important step in designing a mechanical machine. Students will be able to select and kinematically synthesize different mechanisms, do velocity and acceleration analysis, select and design different transmission systems, cam design for specific application.
225	Primary Manufacturing Processes	MECH2203	Employability & Skill Development - This subject enhance in basic manufacturing by fundamental technological systems, lowers error rates and product failures, overall reducing huge costs historically faced by manufacturers.
226	Machine Drawing - II	MECH2211	Employability & Skill Development - Basic Sketching, Options aiding construction, Modelling, Editing, Modifying, Dimensioning tools & features of a solid modelling CAD software (CREO Parametric) are introduced through this Lab course. The knowledge help students to develop an insight about industrial design practice of various machine components which in turn help students take part actively in product development and/or modifications in any company
227	Metrology & Measurement Lab	MECH2212	Employability & Skill Development - Students handle and learn to use very precision instruments to measure various parameters of mechanical components, This skill will help them excel in Quality Control activity in any industry specially the precision ones.
228	Manufacturing Technology Lab	MECH2213	Employability & Skill Development - Students are required to dismantle various assemblies of machine tools like lathe, shaper, milling etc and get familiarised with design, manufacture, assembly and maintainability of various components. This skill will help students to select/ design/ maintain machine tools in an industry.
229	Material Testing Lab	MECH2214	Employability & Skill Development - Students handle and learn to use different materials testing equipment to measure various mechanical properties. This knowledge can apply directly in the industry and they develop themselves as a skilled operator.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
230	Physics II	PHYS2001	Employability & Skill Development - Develop an idea of the different types of statistical distributions and be able to understand semiconductor behavior by application of statistical methods. Understand different dielectric materials, physical interpretation of magnetic properties of matter, and basic understanding of superconductivity. In all cases they must build an ability of addressing related problems and explore the applications of the different theories.
231	Physics II Lab	PHYS2011	Employability & Skill Development - Perform various experiments that will help them determine some very important material constants viz. dielectric constant, Hall coefficient, band gap of semiconductors etc., as well as some universal constants of great importance like Stefan's constant, Planck's constant etc. Develop skills of result analysis and graph plotting along with operational skills of the different experimental apparatus.
232	RF IC Design and MEMS Technology	VLSI6101	Employability & Skill Development - Students will learn noise and interference performance metrics like noise figure, IIP3 and different matching criteria, wireless standards and various transceiver architectures, RF receiver front end, MEMS fabrication technologies, micro-systems technology for technical feasibility which will enhance their employability and skill development
233	Digital VLSI Design Laboratory	VLSI6111	Employability & Skill Development - Students will do hands on practice on Critical Path Modeling and Analysis, Sizing in Digital Design, n CMOS Design of Combinational Circuits and Modules, CMOS Design of Sequential Circuit, Setup and Hold Check, Layout of a system, DRC, LVS, Extraction using Industry Standard Cadence Virtuoso/Assura, Back-annotation and Post Layout Timing Analysis using Industry standard Spectra Circuit Simulator which will enhance their employability and skill development.
234	Communication Techniques	AEIE3101	Employability & Skill Development - Sample analog signal properly and Differentiate among pulse modulation & demodulation techniques and signal multiplexing for engineering solutions. Describe and determine the performance of coding schemes for the reliable transmission of digital representation of signals & information over the channel. Explain the concept of frequency reuse, channel assignment strategies and make use of wireless communication tools
235	Microprocessor- Architecture and Applications	AEIE3102	Employability & Skill Development - Develop the skill in program writing for 8085A microprocessor. Describe different types of memory and I/O interfacing with 8085A microprocessor. Describe the architecture of different types of programmable peripheral devices and their interfacing with 8085A microprocessor. Develop the skill to interface different types of I/O devices with 8085A microprocessor using programmable peripheral device.
236	Industrial Instrumentation	AEIE3103	Employability & Skill Development - Design different flow measuring devices and level measuring devices with necessary accessories for industry. Demonstrate working knowledge of temperature measuring devices. Design electronic instrumentation system for the acquisition of measurement data produced by measuring instruments for flow, level, temperature and pressure. Formulates industrial process parameters towards the analysis of process data
237	Control Systems	AEIE3104	Employability & Skill Development - Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
238	Microprocessors & Microcontrollers	AEIE3105	Employability & Skill Development - This course helps to get jobs in companies that work in embedded systems.
239	Sensors and Transducers Lab	AEIE3111	Employability & Skill Development - Experiment with temperature measuring sensors like AD590 IC sensor, RTD and thermistor. Performance study of capacitive transducer, LVDT, Pressure and displacement sensors. Rotational speed measurement using magnetic proximity sensor, stroboscopic principle. Performance studies of some optical sensors like LDR, photo diode and photo transistor. Design a suitable signal conditioning circuit for a given sensor.
240	Microprocessor Lab	AEIE3112	Employability & Skill Development - Design the interfacing of input/output devices with 8085 microprocessor using partial and absolute address decoding. Build assembly language program to control input/output devices for various applications. Analyze the processing of analog signal and generation of various analog signals using interfacing circuit. Realize the programming concept of hardware interrupts in 8085 microprocessor.
241	Industrial Instrumentation Lab	AEIE3113	Employability & Skill Development - Demonstrate the calibration process of pressure measuring devices using dead weight taster. Measure process parameters like flow, level, temperature, pressure, moisture and viscosity using different industrial instruments.
242	Control Engineering Lab	AEIE3114	Employability & Skill Development - Control the speed of dc motor using different controllers. Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
243	Microprocessors & Microcontrollers	AEIE3115	Employability & Skill Development - It gives the chance to work with actual microprocessors and microcontrollers, to program them for small projects that in turn helps to get jobs in companies that build small pieces of stand-alone or embedded systems with a microprocessor and/or a microcontroller in it.
244	Process Control	AEIE3201	Employability & Skill Development - Develop the mathematical model for the liquid, thermal and gas systems. Design and simulate the ON-OFF, P, PI, PID etc. controllers both in hardware and software using electronic components, simulink, MatLab, LabVIEW etc. and also knowledge of control valve. Design and develop the ladder logic program in PLC towards the solution of the sequential events performed in industry.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
245	Electronic Instrumentation and Measurements	AEIE3202	Employability & Skill Development - Use electronic instruments like VCO, PLL, current mirror, charge amplifier, voltage to frequency and frequency to voltage converter. Explain the circuit operation of CRO, dual trace oscilloscope, delayed time base oscilloscope. Familiar about digital storage oscilloscope, spectrum analyzer. Explain the working of different types of digital voltmeters, digital frequency meter and digital display unit. Check the quality of a coil, capacitor using Q meter.
246	Advanced Microprocessors and Microcontrollers	AEIE3203	Employability & Skill Development - Develop the skill in program writing for 8086 microprocessor, 8051 and PIC microcontroller. Understand and realize the interfacing of memory, input/output devices with 8086, the interrupts of 8086 microprocessor, 8051 and PIC microcontroller and the use of timer/counter and serial data communication process in 8051 microcontroller. Apply the knowledge to interface different type of I/O devices with 8051 and PIC microcontroller.
247	Process Control Lab	AEIE3211	Employability & Skill Development - Develop skill to draw and explain P&I diagram of flow, pressure, level and temperature control loop. Apply software tool to study the close loop process responses. Create ladder logic diagram for various sequential operations commonly used in industrial environment. Provide engineering solutions of various societal, professional & environmental responsibilities.
248	Electronic Instrumentation and Measurement Lab	AEIE3212	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Able to make statistical analysis on large number of data. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
249	Advanced Microprocessors and Microcontrollers Lab	AEIE3213	Employability & Skill Development - Develop 8051/ PIC 16F or 18F series microcontroller based systems to implement various tasks. Design the interfacing of display devices (LED/LCD) with microcontroller. Build program to control input/output devices like motor (stepper motor/servo motor), temperature sensor, key board, etc., with microcontrollers for various applications. Build program using microcontroller to generate different waveforms and perform pulse width modulation of a voltage signal. Design and implement an embedded system using 8051/ PIC 16F or 18F series microcontrollers.
250	Technical Seminar I	AEIE3221	Employability & Skill Development - Build up knowledge in the field engineering, with specialization related to Electronics and Instrumentation engineering and the ability to integrate information across disciplines. Prepare quality presentation on a topic with proper organization and demonstrate the content properly with the aid of audio-video, pictures and documents, etc. Communicate effectively by making an oral presentation before an evaluation committee. Interact efficiently with audience.
251	Fundamentals of Digital Signal Processing	AEIE3231	Employability & Skill Development - Perform mathematical operations on discrete time signals. Design algorithms of digital FIR and IIR filters according to the given specification and realize structure of a digital filter for given transfer function.
252	Mobile Communication	AEIE3232	Employability & Skill Development - Learn cellular concept and the strategies associated with cellular communication. Evaluate GSM and CDMA technologies with their architecture, frame structure, system capacity as well as services provided by them. Design wireless local area networks utilizing the wireless access protocols and determine the merits and limitations of 3G technology.
253	Opto Electronics and Fibre Optics	AEIE3233	Employability & Skill Development - Learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. Learn the various optical source materials, LED structures, quantum efficiency, Laser diodes, fiber optical receivers such as PIN APD diodes. Specify and analyze optical optoelectronic devices in optical fiber communication. Gain the basic concepts of optoelectronics, properties and industrial applications.
254	Biomedical Instrumentation	AEIE3241	Employability & Skill Development - Different sensors used to measure process variables with that of cardiac variables like- blood flow rate, blood pressure, heart sound, cardiac outputs etc. Design of cardiac pacemaker, Defibrillator or other therapeutic instruments. Understand the various method of medical imaging systems like-MRI, X-Rays, Ultrasounds along with the concept of bio-telemetry.
255	Advanced Sensors	AEIE3242	Employability & Skill Development - Acquaint the fundamentals of sensing materials, properties and industrial applications and understand microfabrication techniques. Explain the need for smart sensors and choice of materials in microfabrication techniques.
256	Non Conventional Energy Sources	AEIE3243	Employability & Skill Development - Estimate the scope of wind energy for electricity generation and explain the process to harness energy from nonconventional energy sources like geothermal, tidal, ocean-thermal and wave. Evaluate the economical use of renewable energy resources compared to conventional energy sources.
257	Genetics	BIOT3101	skill development in genetic disorders, genetic counseling
258	Bioinformatics	BIOT3102	skill development in genomics, databases, programming and structure prediction
259	Recombinant DNA Technology	BIOT3103	skill development in DNA cloning, restriction enzymes and DNA editing
260	Transfer Operation-II	BIOT3104	skill development in advanced transfer operations techniques
261	Immunology	BIOT3201	skill development in immunological techniques, immune disorders
262	Plant Biotechnology	BIOT3202	increases employment opportunity in plant tissue culture sector
263	Bioreactor Design and Analysis	BIOT3203	skill development in bioreactor types, mode of action
264	Molecular Modeling & Drug Designing	BIOT3241	increases employment opportunity in drug designing and pharmaceutical industry
265	Biophysics of Macromolecules	BIOT3242	skill development in biophysical techniques
266	Biosensors and Diagnostics	BIOT3243	increases employment opportunity in biosensor and bioinstrumentation industry
267	Biofertilizers and Biopesticides	BIOT3244	increases employment opportunity in biopesticides and biofertilizer sector

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
268	Chemical Reaction Engineering	CHEN3102	Employability & Skill Development - Student will be able to differentiate and analyze between ideal and non ideal reactors using suitable model equations and to utilize the design strategies of non ideal reactors. They can also apply the concepts of RTD as a tool for designing and scale up industrial reactors.
269	Separation Process - II	CHEN3103	Employability & Skill Development - Students will be able to design various process equipment pertaining to separation process like Cooling Tower, Extractor, Dryer. Students will be able to classify different membrane separation and will be able to evaluate the merits of the process.
270	Numerical Methods of Analysis	CHEN3104	Employability & Skill Development - Student will learn to mathematically model using linear algebra, students will be able to relate the dependent and independent variables to define the final equation. Students will be able to identify the broad category of numerical method to solve the corresponding mathematical problem. It will be also possible to model an engineering process using partial differential equations (PDE), students will be able to identify the type of PDE and its associated boundary conditions. Students will develop the numerical form of the governing equation by applying principles of numerical differentiation.
271	Mass Transfer laboratory	CHEN3111	Employability & Skill Development - The objective of the course is to provide an overview of different mass transfer operation relevant to process industry. They can learn to operate Distillation column, Drying Unit, Absorption Column etc.
272	PEDD- I	CHEN3112	Employability & Skill Development - Student can learn to design and Drawing Pressure Vessel - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw industrial scale Reactor.
273	Chemical Reaction Engineering Laboratory	CHEN3113	Employability & Skill Development - Student will learn to operate different type of chemical reactor that are used in industry. They can also learn to analyze the performance of a real reactor by generating its RTD profile.
274	Polymer Science & Engineering	CHEN3131	Employability & Skill Development - The students will be exposed to the knowledge of developing biodegradable and biocompatible polymers for maintaining ecology of the soil. They can learn various types of polymer composites to develop new materials. The students will be knowledgeable in identifying and controlling the use of hazardous behaviour of plastics in the industrial applications and social applications, particularly health issues.
275	Petrochemical Technology	CHEN3132	Employability & Skill Development - Students will learn the design and operation of petrochemical complexes. Students will familiar with major polymerization processes on industrial scale.
276	Material Science & Engineering	CHEN3133	Employability & Skill Development - The students will acquire adequate understanding about the phase diagram of different valuable and commonly used alloys and materials in engineering and do necessary modifications in the composition of the materials like pure metals, alloys like steel, brass etc, polymeric materials, ceramic and composites like FRP, RC casting, Plywood boards, high performance cutting tools, Cermets etc. The students will be knowledgeable in eliminating or introducing structural defects or foreign elements in the original crystal lattice of the materials like preparation of innovative alloys, p & n - type semiconductors, piezoelectric materials etc so as to tailor the properties of the materials according to requirement.
277	Process Dynamics, Instrumentation and Control	CHEN3201	Employability & Skill Development - Student can explain the basic principles & importance of process control in industrial process plants. They can specify the required instrumentation and final elements to ensure that well-tuned control is achieved and can explain the use of block diagrams & the mathematical basis for the design of control systems.
278	Project Engineering	CHEN3202	Employability & Skill Development - The students will be able to prepare network of activities involved in project for plant design or other business processes and critically examine the schedule for the completion of the project and cost impacts for the project. The students will be able to carry out the final feasibility study and an economic assessment for the design of a new plant or expanding an existing business by taking recourse to critical path method or project evaluation & review technique for reporting the success of the project.
279	PEDD- II	CHEN3211	Employability & Skill Development - Student can learn to design and Drawing of Heat Exchangers - thin and thick cylinder design, design of cylinder head, cover plate, selection of gasket, design of bolt and flange and also design and draw various flow measuring devices such as venturimeter, orificemeter, pitot tube etc.
280	Numerical Methods Laboratory	CHEN3212	Employability & Skill Development - The course illustrates the basics of MATLAB or equivalent software programming. Student can develop the logic for the chosen numerical method and can write MATLAB code. They learn to compile the final outcome of the given problem with expected result either in numeric or in graphical representation.
281	Seminar I	CHEN3221	Employability & Skill Development - Student will learn to present different technological advancement in the field of chemical engineering in a professional manner.
282	Nano Technology	CHEN3231	Employability & Skill Development - Student can classify the various types of process used in nano-manufacturing of 1D, 2D and 3D nanostructures. They can identify the processes necessary to build a particular nano structure and can exhibit knowledge of the relevant physical, chemical, mechanical, electrical and optical properties of materials in nano configuration. Students decide on measurements and instruments used for characterizing a nanomaterial.
283	Bioprocess Engineering	CHEN3233	Employability & Skill Development - students can design bioreactors for free enzymatic reaction under enzyme uninhibited/inhibited conditions. They can use principles of bioprocess engineering for selecting and designing suitable contacting device for immobilized enzyme reactions under mass transfer/bioreaction control condition.



Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
284	Analysis of Structures II	CIVL3101	Employability: To assess the advanced methods of calculating force that could act on a structure and to choose materials and reinforcements that will effectively withstand those forces.
285	Soil Mechanics II	CIVL3102	Employability: To analyze the stability of retaining walls, slopes and to determine the bearing capacity and settlement of shallow foundation.
286	Highway & Traffic Engineering	CIVL3103	Employability: To assess the different types of pavement, ingredients with which they are constructed, process of construction, detailed knowledge of traffic like design of rotary intersection, signal design.
287	Environmental Engineering	CIVL3104	Employability: To assess various characteristics of water, waste water and their removal techniques, various treatment units and their designs.
288	Design of R.C.C. Structures	CIVL3105	Employability: Develop an idea to perform analysis and design of reinforced concrete members and connections. Thus, provide professional knowledge to relate contemporary issues in the design and fabrication of reinforced concrete structural elements.
289	Soil Mechanics Lab I	CIVL3111	Employability: To visually identify different types of soil and to determine soil properties.
290	Concrete Technology Lab	CIVL3112	Employability: To test the basic properties of the ingredients of concrete, fresh and hardened concrete properties.
291	Environmental Engineering Lab	CIVL3113	Employability: To determine experimentally the various properties of water as well as waste water.
292	R. C. C. Design & Detailing	CIVL3121	Employability: Able to analyse and design reinforced concrete building for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing and produce design calculations and drawing in appropriate professional format.
293	Design of Steel Structures	CIVL3201	Employability: Able to analyse and design steel structures for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
294	Foundation Engineering	CIVL3202	Employability: To analyze pile foundation and sheet pile structures on the basis of sub-soil exploration results and to assess different types of ground improvement techniques.
295	Prestressed Concrete	CIVL3203	Employability: To learn the concepts of analysis and design methods of Prestressing using high strength materials.
296	Soil Mechanics Lab II	CIVL3211	Employability: To determine the consolidation and shear strength parameters of soil.
297	Transportation Engineering Lab	CIVL3212	Employability: The objective of Transportation Engineering laboratory is to determine some of the properties of coarse aggregates and bitumen.
298	Steel Structure Design & Detailing	CIVL3221	Employability: Able to analyse and design steel structures such as factory shed for different loadings wind, seismic, dead, live etc and prepare structural drawings and detailing.
299	Railway & Airport Engineering	CIVL3231	Employability: To have a detailed knowledge of every aspect of railway engineering like rails, sleepers, ballasts, their use and functions. To have a detailed knowledge regarding airport runway, its design and multiple parameters that are taken into consideration for construction of airport.
300	Advanced Surveying	CIVL3232	Employability: The planning and design of all Civil Engineering projects such as construction of highways, bridges, tunnels, dams etc are based upon surveying measurements. Advanced surveying includes aerial survey, photogrammetry, etc.
301	Design of Tall Structures	CIVL3233	Employability: Learn and apply the fundamental and in-depth concepts required by a civil engineer to design tall/ high rise structures above 50 to 100 m.
302	Soil Stabilization & Ground Improvement Techniques	CIVL3234	Employability: To investigate different methods for improving the stability of the existing ground by reducing its permeability and increasing its overall strength.
303	Object Oriented Programming using C++	CSEN3004	Employability & Skill Development - Ability to develop the object oriented application using C++ and improvement of performance of solution using exception handling will enhance the employability.
304	OOPs Laboratory	CSEN3014	Employability & Skill Development - Hands on experience of object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O, other standard language constructs and other features of the C++ language including use of templates, and handling exceptions improves programming skill & Employability.
305	Formal Language & Automata Theory	CSEN3101	Employability & Skill Development - This is the basic course that teaches the students the underlying theory of computation - what can be computed and what not. The jobs that have the requirement of building new compiler for a new language or capture an input from the user pertaining to a specific regular expression must need this knowledge.
306	Database Management Systems	CSEN3102	Employability & Skill Development - All companies that work in the knowledge or data domain ultimately have to have a database somewhere in the loop that needs to be maintained. So students who get jobs as a DBA as well as those who work in development with a database at the backend are benefitted by this course.
307	Operating Systems	CSEN3103	Employability & Skill Development - Anybody working at the system level in the industry needs this course. Also those who work at the application layer also need to have a solid idea how the operating system operates at the backend in order to make the implementation efficient.
308	Computer Architecture	CSEN3104	Employability & Skill Development - This course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
309	Data Structure & Algorithm	CSEN3106	Employability & Skill Development - increases employment opportunity in IT programming sector.
310	Database Management Systems Lab	CSEN3112	Employability & Skill Development - This gives a hands-on chance to write queries and learn the different commands that a Database Administrator (DBA) needs to execute and hence helps jobs of becoming a DBA. Also good knowledge of this is required for groups writing a banking software or an ERP software.
311	Operating Systems Lab	CSEN3113	Employability & Skill Development - A must course for students who look for jobs as a system administrator and/or developers that need system level knowledge.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
312	Computer Architecture Lab	CSEN3114	Employability & Skill Development - This course complements the Architecture theory course typically helps the students to get jobs in companies working close to the hardware - like developing device drivers.
313	Computer Networks	CSEN3201	Employability & Skill Development - Anybody working in a networking company, like a internet service provider, a mobile service provider, a company that builds networking hardware like CISCO or write networking software for other third party vendors need such a course.
314	Software Engineering	CSEN3202	Employability & Skill Development - Any software engineer working in development project or maintenance project will need this knowledge.
315	Data Base Management System and Computer Networking	CSEN3205	skill development In Information Technology sector
316	Data Structure & RDBMS	CSEN3206	Employability: to understand Linear Data structures , Recursion: Design of Recursive algorithm.
317	Computer Networks Lab	CSEN3211	Employability & Skill Development - It complements the theory course in networking and helps the students to become confident with the basic hardware and software required to be handled in a company that needs to manage a network.
318	Software Engineering Lab	CSEN3212	Employability & Skill Development - It complements the theory course; students learn all the practical aspects of software engineering through mini-projects that are sometimes close replicas of what they do in the industry after joining.
319	System Administration Lab	CSEN3213	Employability & Skill Development - Every software firm need at least one system administrator or a team depending on its size and this course trains up the students for that role.
320	RDBMS Lab	CSEN3216	Employability : To perform Experiments on Database on RDBMS Platform (Oracle)
321	Computer Graphics & Multimedia	CSEN3280	Employability & Skill Development - The students who are seeking jobs in graphics company that help in developing animation for films or content generation need this.
322	Artificial Intelligence	CSEN3281	Employability & Skill Development - This is must course for students working in AI projects which are in abundance in present-day software firms - developing chatbots, ecommerce platforms giving recommendations etc.
323	Web technologies	CSEN3282	Employability & Skill Development - Anybody developing web applications for any company, whether on the client side or server side will find this course very helpful.
324	Advanced Java Programming	CSEN3283	Employability & Skill Development - It prepares the students for companies that develop software in JAVA-based technologies, which is a high percentage for the last two decades.
325	Computer Graphics & Multimedia Lab	CSEN3285	Employability & Skill Development - It complements the corresponding theory course; helps student to learn developing graphics software required in animation companies.
326	Artificial Intelligence Lab	CSEN3286	Employability & Skill Development - Students get a chance to learn some AI languages like LISP, PROLOG etc. Some companies need a prior knowledge of these languages to execute the projects that they handle.
327	Web technologies Lab	CSEN3287	Employability & Skill Development - A very helpful course for students who will join companies writing software for web applications.
328	Advanced Java Programming Lab	CSEN3288	Employability & Skill Development - It gives a hands-on experience on both client-side and server-side programming in JAVA and associated technologies.
329	Seminar I	CSEN3297	Employability & Skill Development - This course prepares the students to communicate effectively with confidence and also learn how to present the important points related to certain technical topic within the specified time, such a requirement arises very often in the industry.
330	Microelectronics And Analog Vlsi Design	ECEN3103	Employability & Skill Development - Understanding of the IC Fabrication Process Flow leading to the practical realization of the scaled MOSFETs, Design MOS circuits of practical importance e.g., common-source amplifiers and differential amplifiers will enrich employability & develop skills.
331	Digital Communication	ECEN3105	Employability & Skill Development - Application of mathematical concepts to analyze the source coder and channel coder blocks of the digital communication system, analysis of error performance of a baseband receiver in digital communication system, understanding of various digital modulation, demodulation techniques and concept of OFDM and Spread Spectrum Modulation system will enhance employability & develop skills.
332	Microelectronics And Analog Vlsi Design Lab	ECEN3113	Employability & Skill Development - Experiments on the basic principle of operation of NMOS and PMOS, VLSI sub-circuits etc will enhance employability & develop skills.
333	Microprocessors, Microcontrollers & Systems Laboratory	ECEN3114	Employability & Skill Development - The concepts of CPU, timing and control signals I/O devices, and various BUS structure, knowledge about interrupts, stack and subroutine , concept the architecture of 8086 family & ARM basics understanding of interfacing of processor with memory and I/O devices and analysis of microcontroller 8051 architecture will increase the employability & develop skills
334	Digital Communication Laboratory	ECEN3115	Employability & Skill Development - Hands-on experiments on Implementation and study Line codes, Analysis and comparison of time domain and frequency domain representation of various digital modulation and demodulation schemes will increase employability & develop skills.
335	Digital Vlsi Design	ECEN3201	Employability & Skill Development - Industry Requirement level learning on VLSI Design Cycle, Style and Methodology , ability to construct Physical Layout Design and Stick Diagram of Digital Gates ,ability to interpret Si Testing and Debug related algorithms and Fault Modeling will enhance the Employability and develop skill.
336	Digital Signal Processing & Applications	ECEN3202	Employability & Skill Development - The concept of z-transformation, convolution, knowledge of discrete-time Fourier transform to interpret DFT, FFT and design of transfer functions of IIR/FIR filters will enhance employability & develop skills.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
337	Digital Vlsi Design Laboratory	ECEN3211	Employability & Skill Development - Backend Design using Industry Standard Mentor Graphics CAD Tool including Eldo Circuit Simulator & Frontend design using XILINX-Vivado Simulator will enrich employability and develop Skill.
338	Digital Signal Processing & Applications Laboratory	ECEN3212	Employability & Skill Development - Hands on experiments on application of different transformation tools-z-transform, discrete fourier transform, fast fourier transform on signals and study on the frequency response of FIR and IIR digital filters and use of DSP processors for analysis of different real time signals will improve the employability & develop skills.
339	Telecommunication Systems	ECEN3234	Employability & Skill Development - Concepts of signaling techniques, setting up links, working principles and practical applications of FAX, EPABX, EFT, Email, ISDN etc , knowledge of EWSD, NGN, ADSL ports will increase the employability & develop skills
340	Electrical Machine-II	ELEC3101	Skill development in- Study of various operations of Synchronous machines and Induction machines
341	Power System-I	ELEC3102	Skill development in study of various methods of conventional power generation. Employability- To develop the electrical design and the mechanical design of power transmission system and to analyze the performance of different types of transmission lines.Study of the underground cables, different type of distribution systems and power factor correction techniques provides employability.
342	Signals & Systems	ELEC3103	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
343	Data Structure and Database Concept	ELEC3104	Employability & Skill Development - Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
344	Electrical machine Lab.-II	ELEC3111	Employability/Entrepreneurship on various testing of Synchronous machine and induction machines
345	Power system-I Lab.	ELEC3112	Skill development to evaluate ABCD parameters of transmission line and to analyse dc distribution network. Measurement of the break-down strength of different insulating materials and earth resistance provides employability.
346	Signals & Systems Lab	ELEC3113	Skill development in signal processing to study and understand the theory behind signals and systems as well as validate the theory with real-word examples.
347	DBMS Laboratory	ELEC3114	Create DBMS schema mapping various business validations and formulate queries based on that schema using SQL to satisfy business requirements. Apply normalization and various types of dependencies for evaluating a relational database design. Apply and relate the concept of transaction, concurrency control and recovery in database. Understand with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing
348	Electronic Instrumentation	ELEC3131	Employability & Skill Development - Use data acquisition system to gather output data from transducer. Implement analog to digital and digital to analog converter. Get hands on experience on voltage controlled oscillator, phase locked loop and spectrum analyzer. Design voltage to current converter, current to voltage converter and digital multimeter.
349	Illumination Engineering	ELEC3132	Employability - Design and develop energy efficient indoor lighting schemes for proper illumination following different standards
350	Power System-II	ELEC3201	Employability and skill development in representation of power system, symmetrical and unsymmetrical fault analysis, power flow and stability analysis. Different grounding schemes, protective relays, circuit breakers and different protection schemes used for different sections of power system provides employability.
351	Power Electronics	ELEC3202	Employability - analyze the operation of different power electronic converters
352	Control System	ELEC3203	Entrepreneurship in control engineering designing. Develop mathematical model of physical and simulated systems in forms of transfer function. Investigate the time response of systems and calculate performance indices. Analyze frequency response and stability of linear systems using different methods. Understand the concept of state variable representation and design principle.
353	Microprocessor & Microcontroller	ELEC3204	Skill development in microprocessor and microcontroller based system by acquiring concept of 8051 and 8085 architecture, assembly language programming and interfacing circuits. Design and analyze various microprocessor based systems to implement suitable application. Entrepreneurship for designing electronic products by learning the building blocks and programming of microprocessor and microcontroller, analytical and computer tools thereby creating employability.
354	Power System-II Lab.	ELEC3211	Employability and skill development in electrical power system protection by operating different types of relay and become proficient with computer skill (e.g. ETAP) for the analysis of power system and its protection.
355	Power Electronics Lab.	ELEC3212	Employability - In study of various power electronics circuits

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
356	Control System Lab	ELEC3213	Entrepreneurship in control engineering designing. Skill development to Investigate the time response of systems. Analyze frequency response and stability of linear systems using different methods.
357	Microprocessor & Microcontroller Lab	ELEC3214	Provides Employability/Entrepreneurship, skill development in electrical engineering by acquiring the basic concepts and properties of 8085 microprocessor and 8051 microcontroller. Analyze and write assembly language programming related to data transfer, arithmetic and logical operations, stack and subroutine operations to design suitable application. Interface various peripheral device with 8085 microprocessor and 8051 microcontroller to implement suitable application.
358	Digital Signal Processing	ELEC3231	Skill development in time domain signal processing and in developing efficient architectures of DSP
359	Electrical Machine Dynamics	ELEC3232	Skill development in the study of dynamic behaviour of different electrical machine.
360	Economics for Engineers	HMTS3101	Employability & Skill Development - It gives a basic idea how the business operates. Any student who work in productization, try to become an entrepreneur or heads a group in which he/she is responsible for profit and loss gets immensely benefitted by it. Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
361	Principles of Management	HMTS3201	Employability & Skill Development - The students joining a software firm soon gets promoted into leadership positions and need to manage projects where they need expertise for both technical issues as well the capability for handling human resources. So this is a must for students joining the industry. Skills and roles of a Manager, functions, principles. Acquire knowledge of planning process, Organizational design and structure, staffing, Decision-Making, coordinating and controlling. Organization Behaviour: Motivation, Leadership, Communication, Teams and Team Work.
362	Personality Development	HMTS3221	Employability & Skill Development - This course helps the learners to learn the necessary tricks and techniques to face the non-technical round of the job interviews, which is an important milestone that they have to cross before being employed in a multi-national company. Learn SWOT Analysis. Expert in Professional Communication. Developed skills like: Leadership & Team Playing, Motivation, Negotiation Skills, Conflict Management and Planning & Envisioning.
363	Foundation Course on Finance, Economics & Marketing	HMTS5201	Employability & Skill Development - Student will learn to participate actively in an organization's capital budgeting process. They can provide vital inputs regarding the pricing of a product. They will learn to interplay of various economic variables and indicators in workplace and provide insight about different accounting concepts and apply broader concepts like costs, revenues, assets, liabilities, capital, profit, investment and interest.
364	Operating Systems Concepts	INFO3101	Employability & Skill Development - Acquired skill of system software that manages computer hardware and software resources.
365	Computer Architecture	INFO3102	Skill development in computer system structuring, Synchronization, communication and scheduling in parallel systems
366	Software Engineering & Project Management	INFO3103	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
367	DBMS	INFO3104	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator.
368	UNIX & Operating Systems Laboratory	INFO3111	Employability & Skill Development - Attain the knowledge in Programming for task, scheduling and memory management techniques.
369	Computer Architecture Laboratory	INFO3112	Employability & Skill Development - Gain knowledge of VHDL Simulator and apply on various complex application.
370	Software Engineering & Project Management Laboratory	INFO3113	Employability & Skill Development - Attain the knowledge of project management dedicated to the planning, scheduling, resource allocation, execution, tracking and delivery of software and web projects.
371	DBMS Laboratory	INFO3114	Employability & Skill Development - Obtain Knowledge for employability in real time applications to manage huge data as Data Base Administrator
372	Communication Theory	INFO3131	Skill development to analyze and design analogue and digital communication systems.
373	Compiler Design	INFO3132	Employability & Skill Development - Gain Knowledge in checking syntax, testing automation and natural language processing which helps in Employability.
374	Discrete Mathematics	INFO3133	Employability/skill development-improves computational skills and data analysis.
375	Data Warehousing & Data Mining	INFO3201	Employability & Skill Development - Acquire skill related to Hadoop and Hadoop Eco-System. Access and Process Data on Distributed File System. Attain knowledge to Develop Big Data Solutions using Hadoop Eco System.
376	Computer Networks	INFO3202	Employability & Skill Development - Gain knowledge on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels
377	Advanced Java & Web Technology	INFO3203	Employability & Skill Development - Attain the skill on how to develop web pages using HTML, Java Script and CSS. Implementation of server side program using servlet and JSP.
378	Data Analytics Lab	INFO3211	Employability & Skill Development - Gain knowledge in core programming basics and program design with functions using Python. Analyze real world datasets and apply suitable clustering algorithms to group data based on similarity.
379	Computer Networks Lab	INFO3212	Employability & Skill Development - A study on how to group and connect the computer systems and other computing hardware devices that are linked together through communication channels

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
380	Advanced Java & Web Technology Lab	INFO3213	Employability & Skill Development - Attain the skill on how to develop web pages using HTML,Servlet and JSP program. Design XML document and DTD.
381	Seminar - I	INFO3221	Employability & Skill Development - Enhance employability due to knowledge of contemporary technology and communication skills.
382	E-Commerce & ERP	INFO3231	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
383	Computer Graphics & Multimedia	INFO3232	Employability through developing various applications which uses a multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video.
384	System Software and Administration	INFO3233	Employability & Skill Development - Learn the basics of system programs like editors, compiler, assembler, linker, loader, interpreter, debugger etc. Learn how to install and manage disks and file systems.
385	E-Commerce & ERP Laboratory	INFO3236	Employability & Skill Development - Acquire skill related to developing online web portals and web applications which helps in employability.
386	Computer Graphics & Multimedia Laboratory	INFO3237	Employability & Skill Development - Acquire necessary skill for developing gaming and graphic environment .
387	System Software and Administration Laboratory	INFO3238	Employability & Skill Development - Configure different servers in linux system. Gain knowledge on how to Install and manage disks and file systems.
388	Artificial Intelligence	INFO3241	Employability & Skill Development - Motivates entrepreneurship in developing many applications like chat bot,increases business efficiency etc
389	Wireless & Mobile Computing	INFO3242	Employability & Skill Development - Helps in employability through understanding the issues surrounding the mobile platforms
390	Pattern Recognition	INFO3243	Employability & Skill Development - Acquired skill on how to recognize patterns by using machine learning algorithm.
391	Digital Logic Design	MCAP1101	Skill development to design applications of Sequential Circuits and Finite State Machines.
392	Introduction To Programming	MCAP1102	Skill development to apply high-level language to automate the solution for a problem.
393	Numerical And Statistical Techniques	MCAP1103	Skill development to understand the basics of numerical and statistical techniques and how those can be abstracted through logical variables and connectives.
394	Discrete Mathematics	MCAP1104	Skill development for understanding mathematical solutions.
395	Management Information System	MCAP1105	Entrepreneurship for accomplishments of managerial goals.
396	Digital Logic Lab	MCAP1111	Skill development to implement the design of Sequential Circuits and Finite State Machines.
397	Programming Lab	MCAP1112	Employability in the field of computer programming.
398	Object Oriented Programming With Java	MCAP1201	Skill development for objet oriented programming concept.
399	Data Structures	MCAP1202	Skill development to apply different types of data structures in algorithms.
400	Database Management Systems I	MCAP1203	Employability in the field of database management systems and Relational database.
401	Optimization Techniques	MCAP1204	Entrepreneurship to develop the idea of job sequencing to minimize the production time and costs, also to help production facility for staff allocation and equipment management.
402	Computer Organization And Architecture	MCAP1205	Skill development to understand the basic computer organization and architecture.
403	Object Oriented Programming Lab	MCAP1211	Skill development to solve real world problems using OOP techniques.
404	Data Structures Lab	MCAP1212	Skill development to evaluate solutions of a problem with different data structures to select suitable data structures for a solution.
405	Dbms I Lab	MCAP1213	Skill development to apply Standard Query Language (SQL) for relational databases.
406	Dynamics of Machines	MECH3101	Employability & Skill Development - Effect of dynamic forces in a system have consequences such as unbalancing and vibration. So, the topics covered in this subject will help the students in designing and maintaining of a machine.
407	Heat Transfer	MECH3102	Employability & Skill Development - In industrial application many a time heat exchangers are required to be designed. This course gives a basic idea on this.
408	Design of Mechanical Systems-I	MECH3103	Employability & Skill Development - Knowledge aquired by students in this paper will help them to take part actively in designing any product or modification of any existing product for better performance.
409	Fluid Mechanics & Hydraulic Machines Lab	MECH3111	Employability & Skill Development - Hands on traing on hydraulics equipment and hydraulic machines are helpful for direct bearing on employability.
410	Design Practice – I	MECH3112	Employability & Skill Development - In this paper students are discussed with industrial design practice of various machine components and also they are trained in various solid modeling tools of a CAD software. Knowledge on industrial design practice and modeling tools of a CAD software helps students takes part actively in product developement and/or modifications in any company.
411	Seminar-I	MECH3121	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
412	Fluid Power Control	MECH3131	Employability & Skill Development - Concepts on fluid power control may provide students an opportunity and a significant role in manufacturing industries.
413	Refrigeration & Air Conditioning	MECH3132	Employability & Skill Development - Theoretical concept of Refrigeration are required to design different refrigeration unit, calculating heat load etc.
414	Electrical Machines	MECH3133	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). A preliminary idea about the working principle and the charateristics of such machines will lead to an increased productivity in the shop floor.

Sl No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
415	Fluid Power Control Lab	MECH3136	Employability & Skill Development - In the practical class, identification of various components of a Hydraulic and Pneumatic system, preparation of circuits using those components, along with the calculation of input power requirement, speed of actuator are done, which are integral parts of selection of input parameters in machining operations in industrial application.
416	Refrigeration & Air Conditioning Lab	MECH3137	Employability & Skill Development - Identification of various key components of a refrigeration and air conditioning system and the calculation of COP are extremely important for employment in refrigeration, air conditioning, and cryogenic engineering which is imparted in this Lab.
417	Electrical Machines Lab	MECH3138	Employability & Skill Development - A student while working in any shop floor will face several electrical machines (both AC and DC). Hands on training or a preliminary idea about the working principle and the characteristics of such machines will lead to an increased productivity in the shop floor.
418	Total Quality Management (TQM)	MECH3141	Employability & Skill Development - Students must have adequate knowledge on usages of various statistical tools and the techniques to be applied in the Industries to maintain consistency in quality.
419	Finite Element Method	MECH3142	Employability & Skill Development - FEM is the backbone of numerical validation of any product under design. So, knowledge on this paper will help them to be an active member in the RnD team of any company.
420	Turbo Machinery	MECH3143	Employability & Skill Development - Theoretical concept of turbomachines are required to design different hydraulic plant, power plant etc.
421	New Product Development	MECH3144	Employability & Skill Development - Theoretical knowledge on new product development concepts involving need analysis, technology forecasting and development planning
422	Tool Engineering	MECH3145	Employability & Skill Development - Students understand directly tool geometry, cutting tool features suitable for adverse conditions and how to make a cutting tool.
423	Industrial Robotics	MECH3146	Employability & Skill Development - The topics covered in the course will help student to conceptualize, analyze, design and control of robots for different industrial applications.
424	IC Engines	MECH3201	Employability & Skill Development - Overall concept of conversion of fuel energy into mechanical energy including the various mechanisms which are required for conversion of motion will be highly applicable in automobile industry.
425	Machining Principle & Machine Tools	MECH3202	Employability & Skill Development - Machining and Machine tools are playing an important part in various manufacturing companies. It helps in delivering products and components to the maximum possible specifications. It is the main foundation for precision manufacturing.
426	Dynamics of Machines Lab	MECH3211	Employability & Skill Development - With the knowledge and experiences of this subject, students will be able to monitor vibration, measure unbalancing and do corrections, evaluate performance of governors, design a cam for specific application.
427	Applied Thermodynamics & Heat Transfer Lab	MECH3212	Employability & Skill Development - Practical knowledge on (i) dryness fraction of steam and (ii) various other devices involving convecting heat transfer coefficient will be an added advantage for students working in thermal power plant.
428	Seminar-II	MECH3221	Employability & Skill Development - This course empowers students while in job to prepare and present technical reports in proper sequence. Also it gives further room for more analysis of a given problem.
429	Design of Mechanical Systems-II	MECH3251	Employability & Skill Development - In this paper students are taught about various machine component designs, like design of Gears, design of Breaks and Clutches, design of Pressure Vessels and design of Bearings. So detailed knowledge on this paper will give them a cutting edge to work with technical command in any mechanical company where these components are used extensively, or these machine elements are manufactured.
430	Mechatronics	MECH3252	Employability & Skill Development - Theoretical knowledge on industrial automation and control, CNC machines, robots and automated handling system.
431	Advanced Fluid Mechanics	MECH3253	Employability & Skill Development - Theoretical concept of advanced fluid mechanics are required to design modern hydraulic plant, power plant etc.
432	Design Practice - II Lab	MECH3256	Employability & Skill Development - Students are taught in detail about various Pre-processing and Postprocessing tools of a FEA software in this practical paper. Knowledge on numerical analysis of any object or product under various loading and boundary conditions using a FEA software gives the students immense capability and a fair opportunity to work in the R-n-D team of any core company or to do a research work efficiently in their higher studies.
433	Mechatronics Laboratory	MECH3257	Employability & Skill Development - Programming, operation and use of industrial automated equipment
434	Advanced Fluid Mechanics Lab	MECH3258	Employability & Skill Development - Practical knowledge of various hydraulic machines and piping systems would be helpful for students employment in various power plants.
435	Maintenance Engineering	MECH3261	Employability & Skill Development - Owning machines and plants are not enough unless the students have fair knowledge about how well the machines are maintained, upkept, mended and tended for restoration of plant performance.
436	Renewable Energy Systems	MECH3262	Employability & Skill Development - Comprehensive know-how must be acquired by students for different renewable energy systems in the backdrop of increasing global energy demands and fast-depleting fossil fuel reserves, including their selection criteria, design and maintenance for specific applications.
437	Materials Handling	MECH3263	Employability & Skill Development - A comprehensive knowledge must be acquired by the students for different material handling equipments, including its selection criteria, maintenance and design with the specific applications.

SI No	Name of the Course	Course Code	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
438	CAD/CAM	MECH3264	Employability & Skill Development - CAD/CAM/CAE are the three pillar in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
439	Operations Management	MECH3265	Employability & Skill Development - CAD/CAM/CAE are the three pillars in now-a-days product development and modification. So knowledge on CAD/CAM generates extra acceptability of the students to be selected by any core company where machine and machine components are used and/or developed.
440	Energy Resource	REEN5101	Employability & Skill Development - Student will learn different resources of renewable energy and how to extract energy economically to address global energy crisis
441	Renewable Energy I	REEN5102	Employability & Skill Development - Students will be able to explain the basics of solar PV cells and relevant parameters for its characterization. They will be able to explain the important features of first to third generation solar cell technology. They can also learn to design solar thermal collector
442	Materials for Energy conversion systems	REEN5104	Employability & Skill Development - Student will learn about the manufacturing process of nano-material and its characterizations techniques. They can design photovoltaic material and its electronic properties for the solar energy application and understand the role of selection for the wind turbine material and its required properties.
443	Solar Laboratory	REEN5111	Employability & Skill Development - Student will learn handle solar module and also learn to characterize them. Student will learn to handle solar power measuring instruments.
444	Energy Devices Laboratory	REEN5112	Employability & Skill Development - Student will learn to handle device and instruments that are used for storage and measurement of energy production and distribution
445	Seminar -I	REEN5121	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
446	Design of Heat Transfer Equipments	REEN5141	Employability & Skill Development - Student will learn the operating principles of heat transfer equipment and problems associated at preliminary stage of design. The course will act as a bridge between theoretical and practical concept used in industry. Students can also model basic heat transfer processes and identify modes. They can design heat exchanger network also.
447	Renewable Energy II	REEN5203	Employability & Skill Development - Students will be able to identify different technologies in generating energy from biomass. Students will be able to describe the process used in harnessing and implementation of wind energy. Students will be able to categorize hydraulic turbines in generating hydropower.
448	Non solar laboratory	REEN5211	Employability & Skill Development - Student will be able to design processes producing alternative source of energy. They can characterize the quality of fuel generated from alternative source and operate electrical equipments for power generation.
449	Internship	REEN5221	Employability & Skill Development - Students get exposure of industrial operation by visiting in person to an industry engaged in harvesting energy from renewable resource
450	Seminar -II	REEN5222	Employability & Skill Development - Student will learn to present different technological advancement in the field of Renewable Energy Engineering in a professional manner.
451	Measurement and Control for Energy System	REEN5241	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameter for the process related to energy production and distribution.
452	Energy & Environmental Impact Analysis	REEN5242	Employability & Skill Development - The students will be able to identify the Basics of Environmental Engg. Principles need for carrying out EIA. The students will be able to analyze different technologies and Legislations / Rules. The students will be able to implement Do's & Don'ts practices for Renewable Energy Endeavours.
453	Electronics Instrumentation & Control for Energy System	REEN5244	Employability & Skill Development - Student will learn to design control system of an industrial process and also able to optimize controller parameter for the process related to energy production and distribution.