Description of Courses developed and implemented in various Programs having relevance to the Local, National, Regional and Global Developmental Needs

1.1.1 Additional Information

For Regulation 2015

Table :1.1.1a1		For R2015	Name of the UG Program : B.E. Mechanical Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local /National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2018	15UGM951	Smart Manufacturing	Global	Manufacturing is entering a period of radical change and transformation. Industry 4.0, which focuses on virtualization, decentralization, real-time capabilities, service orientation, and modularity, is the next phase of digitalization in manufacturing. It's a new approach that uses hyper connected technologies to better understand operations and transform working with partners, suppliers and customers. It combines traditional production processes with innovative technologies such as IoT and AI to improve connectivity, communication, and automation.
2.	2018	15UGM952	Automation in Agriculture	National	Agriculture in the modern age is changing rapidly. Rising global population and shifting trade policies affect the pricing, supply chain, and delivery of food products. These growing and changing demands need to be met by an agriculture industry that is facing labour shortages and rising costs for farm work. In the face of labour shortages, farmers are turning to technology to make farms more efficient and automate the crop production cycle.
3.	2017	15UME701	Project Management and Finance	Global	Project management provides leadership and vision, motivation, removing roadblocks, coaching and inspiring the team to do their best

					work. Project managers serve the team but also ensure clear lines of accountability.
4.	2017	15UME702	Finite Element Analysis	Global	Finite Element Analysis (FEA) is a computer-based technique that calculates how components are likely to perform in real-life applications. This advanced technique can determine how components may be impacted by exposure to extremes in temperature and pressures, particular stresses and aggressive chemical environments. Skilled use of FEA simulation can remove the need for extensive manual testing by accurate modelling through predictive behaviours. Mechanical stress and vibration are among the factors typically considered in this type of analysis. FEA simulation enables design engineers to highlight potential faults or areas of weaknesses in a component, impact the overall application's efficiency or its ability to function in a given application.
5.	2017	15UME703	Mechatronics	Global	Mechatronics is a multidisciplinary field that combines several types of engineering—electrical, computer, and mechanical—and refers to the skill sets needed in the contemporary, advanced automated manufacturing industry. At the intersection of mechanics, electronics, and computing, mechatronics specialists create simpler, smarter systems. Mechatronics is an essential foundation for the expected growth in automation and manufacturing.
6.	2017	15UME706	Computer Aided Analysis and	Global	Finite Element Analysis (FEA) is useful to any engineer that needs to perform structural

			Simulation Laboratory		analysis. This software allows you to analyze stresses and deflections in complex structures. Popular examples include ANSYS and Nastran. Typically a structure will be modeled in a 3D CAD program and then ported over to the FEA software. Previously, the porting process involved exporting the CAD model to a file format that could then be interpreted by the FEA software, but now many FEA packages integrate directly with CAD packages to make the transition seamless.
7.	2017	15UME801	Professional Ethics	Global	Good Ethics is a fundamental requirement of any profession. It is integral to the success of the business as well. Ethics is a system of moral principles governing the appropriate conduct of a person or a group. Maintaining good ethics is being consistent with the principles of correct moral conduct constantly.
8.	2017	15UME972	Industrial Safety and Engineering	Global	Industrial safety is important as it safeguards human life, especially in high risk areas such as nuclear, aircraft, chemical, oil and gases, and mining industries, where a fatal mistake can be catastrophic. Industrial Safety reduces risks to people, and processes. Process control and safety systems are usually merged. Maintaining a safe and healthy working environment is not only an important human resources issue, it's the law. Whether they're entry-level workers, seasoned veterans, supervisors, or plant managers, the employees need to understand health and safety risks, the steps they need to take to minimize those risks, and common safety standards and compliance procedures.

					The students will be equipped with concepts of engineering systems safety, dimensions of engineering systems safety, safety design and analysis mathematics, design for engineering systems safety and control for safety, and integrating safety with other operational goals such as quality and reliability.
9.	2016	15UME504	Operations Research	National	Operations research enhancing daily operations, fair comparison, building a high-level strategy, and smoother inventory planning and management. It also helps design company processes, tells how to allocate assets, and solves management problems. Operations Research helps to utilize advanced analytical methods for making better decisions in industries. The process involves employing different techniques from other mathematical sciences like mathematical models, mathematical optimization and statistical analysis.
10.	2016	15UME901	Industrial Quality Management	Global	Industrial Quality Management is a participative, systematic approach to planning and implementing a constant organizational improvement process. Its approach is focused on exceeding customers' expectations, identifying problems, building commitment, and promoting open decision-making among workers.
11.	2015	15UME302	Manufacturing Technology-I	National	Manufacturing technology provides the tools that enable production of all manufactured goods. These master tools of industry magnify

12.	2015	15UME403	Manufacturing Technology II		the effort of individual workers and give an industrial nation the power to turn raw materials into the affordable, quality goods essential to today's society
13.	2015	15UME211	Computer Aided Drafting and Modeling Laboratory	National	Computer-aided design (CAD) involves creating computer models defined by geometrical parameters. These models typically appear on a computer monitor as a three-dimensional representation of a part or a system of parts, which can be readily altered by changing relevant parameters. CAD systems enable designers to view objects under a wide variety of representations and to test these objects by simulating real-world conditions.

For Regulation 2019

Table :1.1.1b1		For R2019	Name of the UG Program: B.E. Mechanical Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2020	19UME602	Smart Manufacturing	Global	Manufacturing is entering a period of radical change and transformation. Industry 4.0, which focuses on virtualization, decentralization, real-time capabilities, service orientation, and modularity, is the next phase of digitalization in manufacturing. It's a new approach that uses hyperconnected technologies to better understand operations and transform working with partners, suppliers and customers. It combines traditional production processes with innovative technologies such as IoT and AI to improve connectivity, communication, and automation.
2.	2020	19UME603	Operations Research	Global	Operations research enhancing daily operations, fair comparison, building a high-level strategy, and smoother inventory planning and management. It also helps design company processes, tells how to allocate assets, and solves management problems. Operations Research helps to utilize advanced analytical methods for making better decisions in industries. The process involves employing different techniques from other mathematical sciences like mathematical models, mathematical optimization and statistical analysis.

3.	2020	19UME604	Mechatronics	Global	Mechatronics is a multidisciplinary field that combines several types of engineering—electrical, computer, and mechanical—and refers to the skill sets needed in the contemporary, advanced automated manufacturing industry. At the intersection of mechanics, electronics, and computing, mechatronics specialists create simpler, smarter systems. Mechatronics is an essential foundation for the expected growth in automation and manufacturing.
4.	2020	19UME609	Smart Manufacturing & Mechatronics Laboratory	Global	With the development of Industry 4.0 and the emergence of the smart factory concept, the traditional philosophy of manufacturing systems will change. The Smart Manufacturing & Mechatronics Laboratory introduces changes to the factors and elements of traditional manufacturing systems and incorporates the current requirements of smart systems so that it can compete in the future. An increasing amount of research in both academia and industry is dedicated to transitioning the concept of the Smart Manufacturing from theory to practice.
5.	2019	19UME403	Manufacturing Technology	Global	Manufacturing technology provides the tools that enable production of all manufactured goods. These master tools of industry magnify the effort of individual workers and give an industrial nation the power to turn raw materials into the affordable, quality goods essential to today's society.
6.	2019	19UME405	Automobile Engineering	Global	Automotive engineers are involved in the design, manufacture, distribution, marketing,

					sales and after-sales care of cars (including racing cars), motorbikes and other commercial vehicles. Automotive engineers are concerned with the development of passenger cars, trucks, buses, motorcycles or off-road vehicles. They do one or more of the following: Design new products or modify existing ones. Troubleshoot and solve engineering problems.

For Regulation 2015

Table :1.1.1a1		**For R2015**	**Name of the UG Program :B.E. Computer Science and Engineering**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2015	15UCS501	Internet and Web Technology	Global	Every business is now conducted globally using the web. The online presence on the web is very important in this digital world to advertise, promote and sell their products and services for the organization to worldwide user.
		15UCS507	Internet and Web Technology Laboratory		
2.	2015	15UIT602	Mobile Applications Development	Global	Mobile applications are easier to connect the marketers with their customers. They are the best marketing tools to develop businesses. The mobile application allows customers to have all information at their fingertips. Government of India takes the steps to develop mobile applications for various
		15UIT608	Mobile Applications Development Laboratory		

					ministries. Mobile applications now eventually supports in all the domains.
3.	2015	15UCS603	Artificial Intelligence	Global	Artificial Intelligence (AI) is poised to disrupt our world. With intelligent machines enabling high-level cognitive processes like thinking, perceiving, learning, problem solving and decision making, coupled with advances in data collection, aggregation, analytics and computer processing. AI presents opportunities to complement and supplement human intelligence and enrich the way people live and work.AI is not a futuristic vision, but rather something that is here today and being integrated with and deployed into a variety of sectors. This includes fields such as finance, national security, health care, criminal justice, and transportation. There are numerous examples where AI already is making an impact on the world and augmenting human capabilities in significant ways. India, being the fastest growing economy with the second largest population in the world, has a significant stake in the AI revolution.
4.	2015	15UCS702	Insight into Cloud Computing	Global	Cloud computing adds importance of IT by increasing access to technology that drives economic growth at the global, national, and local levels. It allows anyone — a start-up, an individual consumer, a government, or
		15UCS706	Cloud Computing Laboratory		

					a small business — to access technology previously available only to large organizations.
5.	2015	15UCS703	Data Science	Global	Data science offers technologies and techniques that are widely used in commercial industries to enable organizations to make more-informed business decisions and by scientists and researchers to verify or disprove scientific models, theories and hypotheses. It is applied wherever bigdata has to be processed.
		15UCS707	Data Science Laboratory		
6.	2015	15UCS909	Natural Language Processing	Global	Natural language processing helps computers communicate with humans in their regional language and scales other language-related tasks. The most widely used NLP application is machine translation which helps to overcome the language barriers. To convert information from one language to another, machine translation can be used.
7.	2015	15UCS910	Building Internet of Things	Global	IoT allows automating processes and saving money. IoT influences in all the places where there is a need of smart processes.
8.	2015	15UCS913	Cyber Forensics	Global	Cyber forensics is the application of investigation and analysis techniques to gather and preserve evidence from a particular computing device in a way that is suitable for presentation in a court of law. The goal of cyber

					forensics is to perform a structured investigation while maintaining a documented chain of evidence to find out exactly what happened on a computing device and who was responsible for it.
9.	2015	15UCS927	Machine Learning Algorithms	Global	Machine learning focuses on the development of computer programs to predict the outcomes and the primary aim is to allow computers to learn automatically without human intervention. It is the need of automation era.

For Regulation 2019

Table :1.1.1b1		**For R2019**	**Name of the UG Program: B.E. Computer Science and Engineering**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/ Regional/ Global Developmental needs**	**Description about the need**
1.	**2**019	19UCS920	Cyber Security	Global	Cyber security involves digital measures such as electronic passwords and encryption, used to prevent unauthorized tampering. It is very important to consider the cyber security while sharing the information across globally or nationally.
2.	2019	19UCS919	Block chain Technology	Global	Block chain technology is like a distributed ledger and it has lowered transaction costs and broader financial access for individuals and companies; strengthened financial and social

					stability through greater economic participation; stronger economic activity; and the enhancement of appropriate transparency, security, and privacy. Among other things, these transformations could usher in a halcyon age of entrepreneurship, as small companies anywhere in the world can have all the capabilities of big companies without the corresponding liabilities, such as deadening bureaucracy or legacy culture.

For Regulation 2015

Table :1.1.1a1		For R2015	Name of the UG Program : B.E. Electronics and Communication Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional/Global Developmental needs**	**Description about the need**
1.	2015	15UCS429	Programming with C Laboratory	Global	It is necessary for an Electronics Engineer to be proficient in C. C is the language used to program embedded systems. it is good to upgrade programming skills to get a job in IT companies.
2.	2015	15UEC609	Technical Project	National	This course is introduced to enrich the technical skills of the student and to analyze small technical problems and develop prototype model. This course is also designed to improve the presentation and report writing skills.
3.	2015	15UEC903	ARM processor Architecture	National	The ARM architecture processor is an advanced reduced instruction set computing [RISC] machine and it's a 32bit reduced instruction set computer (RISC) microcontroller. The Arm architecture is used in a range of technologies, integrated into System-on-Chip (SoC) devices such as smart phones, microcomputers, embedded devices, and even servers. The architecture exposes a common instruction set and workflow for software developers, also referred to as the Programmer's model. This helps to ensure interoperability across different

					implementations of the architecture, so that software can run on different Arm devices.
4.	2015	15UEC905	DSP Processor Architecture	National	A digital signal processor (DSP) is a specialized microprocessor chip, with its architecture optimized for the operational needs of digital signal processing. They are widely used in audio signal processing, telecommunications, digital image processing, radar, sonar and speech recognition systems, and in common consumer electronic devices such as mobile phones, disk drives and high-definition television (HDTV) products. The goal of a DSP is usually to measure, filter or compress continuous real-world analog signals. Also, dedicated DSPs usually have better power efficiency, thus they are more suitable in portable devices such as mobile phones because of power consumption constraints. DSPs often use special memory architectures that are able to fetch multiple data or instructions at the same time.
5.	2015	15UEC906	Advanced Digital System Design	National	This course has an in-depth knowledge of digital integrated circuit hardware design. The emphasis is on FPGA technology, but most of the design techniques can also be applied to ASIC devices. Design of logic machines. Finite state machines, gate array designs, ALU and 4 bit CPU unit designs, micro-programmed systems. Hardware design of advanced

					digital circuits using XILINX. Design includes simulation of circuits using VHDL before actual hardware implementation and PLDs programming.
6.	2015	15UEC915	Internet of Things	Global	The internet of things can be defined as the evolution of the mobile and installed applications connected to the internet. IoT based devices collect information successfully using data analytics and thus these devices can also share the information on the cloud. Besides, the internet of things devices also analyzes it in a secure context. So there are many industries that are adopting the internet of things solution technology considering the future demand and to improve the current system as well.
7.	2015	15UEC918	Remote Sensing and Information System	Global	A geographic information system (GIS) manages location-based information and provides tools for display and analysis of various statistics, including population characteristics, economic development opportunities, and vegetation types. GIS allows you to link databases and maps to create dynamic displays. Additionally, it provides tools to visualize, query, and overlay those databases in ways not possible with traditional spreadsheets. These abilities distinguish GIS from other information systems, and make it valuable to a wide range of public and private enterprises for explaining events, predicting outcomes, and planning

					strategies. Remote sensing is the art and science of making measurements of the earth using sensors on airplanes or satellites. These sensors collect data in the form of images and provide specialized capabilities for manipulating, analyzing, and visualizing those images. Remote sensed imagery is integrated within a GIS.
8.	2015	15UEC919	Nano electronics	Global	Nanoelectronics refers to the use of nanotechnology in electronic components. The term covers a diverse set of devices and materials, with the common characteristic that they are so small that inter-atomic interactions and quantum mechanical properties need to be studied extensively. Some of these candidates include: hybrid molecular/semiconductor electronics, one-dimensional nanotubes/nanowires (e.g. Silicon nanowires or Carbon nanotubes) or advanced molecular electronics.
9.	2015	15UEC924	Artificial Intelligence and Machine Learning	Global	Artificial Intelligence and Machine Learning is a hot topic in the technical industry. Perhaps more than our daily lives Artificial Intelligence (AI) is impacting the business world more. AI is everywhere, from gaming stations to maintaining complex information at work. Computer Engineers and Scientists are working hard to impart intelligent behavior in the machines making them

					think and respond to real-time situations. AI is transiting from just a research topic to the early stages of enterprise adoption. Tech giants like Google and Facebook have placed huge bets on Artificial Intelligence and Machine Learning and are already using it in their products.

For Regulation 2019

Table :1.1.1b1		**For R2019**	**Name of the UG Program: B.E. Electronics and Communication Engineering**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional/Global Developmental needs**	**Description about the need**
1.	2019	19UEC206	Electronic Devices	Global	*Electronics devices are changing 21st Century. Electronics devices is driven by a broad range of applications and challenges and enabled by a wide range of science. Problem-driven research is re-shaping disciplines, creating new ones, and addressing fundamental research questions.*
2.	2019	19UEC302	Digital Electronics and Design	Global	Digital electronics is a field of electronics involving the study of digital signals and the engineering of devices that use or produce them.
3.	2019	19UEC303	Circuit Theory	Global	Electric circuits or networks are the assemblage of devices and or equipment needed to connect the source of energy to the user or the device which exploits it. Communications systems, computer

					systems and power systems all consist of more or less complicated electric circuits which themselves are made up of a number of circuit elements.
4.	2019	19UEC402	Electromagnetic Fields and Transmission Lines	Global	Electric and magnetic fields are important factors to be considered when designing transmission lines. They occur in nature and have become much more prevalent in our everyday lives through man-made sources such as electric power. When planning transmission lines it is important that designers have a reasonable understanding of the nature of both so it can be considered during design; understand the effects of electric and magnetic fields from transmission line operation including corona; and mitigate these effects by modifying the design, where possible.

For Regulation 2015

Table :1.1.1a1		For R2015	Name of the UG Program : B.E. Electrical and Electronics Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional/ Global Developmental needs**	**Description about the need**
1	2015	15UEE302	DC Machines and Transformers	Global	Apply the concepts of electromechanical energy conversion principles to derive expressions for voltage and torque developed in electrical machines. Advanced electrical applications have the concepts of DC Machines.
2	2015	15UEE304	Power System Generation	Global	Understand the role of Electrical Engineers in their operation and maintenance. Students will get the job opportunities in power sector globally.
3	2015	15UEE404	Transmission and Distribution	National	Impart knowledge on the computation of transmission line parameters, modeling of transmission lines and distribution schemes.
4	2015	15UEE405	Analog Integrated Circuits	Local	Impart knowledge on the characteristics of OPAMP, IC fabrication procedure and OPAMP based application circuits. This course will help the students to do projects for small applications.

5	2017	15UEE501	Power Electronics	National	Get an overview of different types of power semiconductor devices and their dynamic characteristics. Power Electronic controllers are used in renewable energy sources.
6	2017	15UEE502	Power System Analysis	Regional	Impart knowledge on stability analysis of power system. Power systems under abnormal conditions for both balanced and Unbalanced load can be analyzed.
7	2015	15UEE503	Microprocessors and Microcontroller Programming	Global	Familiarize the architecture, addressing modes and instruction sets of μP8085 & μC 8051. Advanced controllers are used globally based on the required applications.
8	2015	15UEE504	Electrical Machine Design	National	Impart knowledge on the design of DC &AC machines. Main dimension and various parameters of the machines are analyzed according to the basic needs.
9	2017	15UEE601	Advanced Electric Drives and Control	Regional	Explain the operation of the converter / chopper fed dc drive and ac drive
10	2018	15UEE702	Power System Operation and Control	Regional	Impart knowledge on real power-frequency control and reactive power-voltage control

11	2018	15UEE703	Electric Energy Utilization	Global	Impart knowledge on Electric Vehicles and various energy storage systems
12	2015	15UEE915	Neural Network and Fuzzy Systems	Global	Introduce the concept of fuzzy set theory and fuzzy logic controller
13	2015	15UEE918	Power Quality	Global	Impart knowledge on the various power quality phenomenon, their origin and monitoring and mitigation methods.
14	2016	15UEE924	Energy Audit	Global	Familiarize energy scenario, energy audit, energy conservation and refrigeration and air Conditioning
15	2015	15UEE926	PLC and SCADA Applications	Global	Impart knowledge on the PLC and SCADA architecture operation and applications. Course will be helpful in understanding the automation process in industries.
16	2015	15UEE972	Electric and Hybrid Vehicles	Global	Impart knowledge on the working of different configurations of electric vehicles, and its components, hybrid vehicle configuration and performance analysis
17	2015	15UEE973	Solar Power Plants	Global	Outline the variety of solar systems used to collect solar energy

18	2015	15UEE975	Principles of Robotics	Global	Students will know the Robot programming and path planning.
19	2015	15UEE976	Applied Soft Computing	Global	Offer a basic knowledge on expert systems, fuzzy logic systems, artificial neural networks and optimization techniques
20	2015	15UEE861	Wind farm Development and Operation	Global	Impart the knowledge of Installation and Commissioning of Wind Turbines.
21	2016	15UEE864	Solar Photovoltaic Technology	Global	Impart the knowledge on types and design of various PV-interconnected systems.
22	2018	15UEE865	Industrial safety measures	Global	Impart knowledge on Factories Act and Environment Act.
23	2016	15UEE867	Energy Storage Systems	Global	Students will know the fundamental concepts of batteries. Battery performance and its usage can be analyzed.

For Regulation 2019

Table :1.1.1b1		**For R2019**	**Name of the UG Program: B.E. Electrical and Electronics Engineering**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional/Global Developmental needs**	**Description about the need**
1	2019	19UEE205	Introduction to Electrical and Electronics Engineering	Local	Familiarize with the concepts of basic electrical and electronics engineering.

2	2019	19UEE211	Introduction to Electrical and Electronics Engineering Lab	Local	Familiarize with the basic characteristics of electrical and electronic components.
3	2019	19UEE502	Internet of Things for Electrical Automation	Global	Understand the concepts of automation in electrical field through IoT.
4	2019	19UEE702	Electric and Hybrid Vehicles	Global	Understand the construction, working and characteristic features of Electric and Hybrid Vehicles.
5	2019	19UEE708	Renewable Energy Laboratory	Global	Understand and analyze the efficiency of power production through Renewable energy.

For Regulation 2015

Table :1.1.1a1		For R2015	Name of the UG Program :B.Tech. Information Technology		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/ Regional/Global Developmental needs**	**Description about the need**
1.	2015	15UCS501	Internet and Web Technology	Global	Every business is now conducted globally using the web. The online presence on the web is very important in this digital world to advertise, promote and sell their products and services for the organization to worldwide user.
		15UCS507	Internet and Web Technology Laboratory		
2.	2015	15UIT602	Mobile Applications Development	Global	Mobile applications are easier to connect the marketers with their customers. They are the best marketing tools to develop business. The mobile application allows customers to have all information at their fingertips. Government of India takes the steps to develop mobile applications for various ministries. Mobile applications even can be developed for particular interest groups in some regions.
		15UIT608	Mobile Applications Development Laboratory		
3.	2015	15UGM952	Automation in Agriculture	Global	With automation technology, produce reaches consumers faster, fresher, and more sustainably. Increase in productivity from automation increases the yield

					and rate of production, therefore reducing costs for consumers.
4.	2015	15UCS702	Insight into Cloud Computing	Global	Cloud computing adds importance of IT by increasing access to technology that drives economic growth at the global, national, and local levels. It allows anyone — a start-up, an individual consumer, a government, or a small business — to access technology previously available only to large organizations.
		15UCS706	Cloud Computing Laboratory		
5.	2015	15UIT601	Cryptography and Network Security	Global	Cryptography and Network Security is a concept to protect network and data transmission over wireless network. Here, content data would be used as an input data for cryptography so that data become unreadable for attackers and remains secure from them.
		15UIT607	Security Laboratory		
6.	2015	15UGM951	Smart Manufacturing	Global	Smart manufacturing (SM) is a technology-driven approach that utilizes Internet-connected machinery to monitor the production process. The goal of SM is to identify opportunities for automating operations and use data analytics to improve manufacturing performance.
7.	2015	15UIT905	Internet of Everything	Global	The internet of Everything is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers

					(UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction
8.	2015	15UIT910	Building Enterprise Application	Global	Enterprise applications are typically designed to interface or integrate with other enterprise applications used within the organization, and to be deployed across a variety of networks (Internet, Intranet and corporate networks) while meeting strict requirements for security and administration management.
9.	2015	15UIT911	Software Testing	Global	Testing is required for an effective performance of software application or product. It's important to ensure that the application should not result into any failures because it can be very expensive in the future or in the later stages of the development.

For Regulation 2019

Table :1.1.1b1		For R2019	Name of the UG Program: B.Tech. Information Technology		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional/Global Developmental needs**	**Description about the need**
1.	2019	19UIT502	Cyber Security Essentials	Global	Cyber security protects the data and integrity of computing assets belonging to or connecting to an organization's network. Its purpose is to defend those assets against all threat actors throughout the entire life cycle of a cyber attack.
2.	2019	19UIT602	Artificial Intelligence	Global	Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving

For Regulation 2015

Table :1.1.1a1		For R2015	Name of the UG Program: B.E. Civil Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2015	15UCE208	Computer aided Building Drawing	Global	Outsource 2 India Mobile Access to CAD. As per a Outsource 2 India survey, close to 30% of computer aided designing developers are currently deploying some means of accessing the data on mobile platforms and this number is expected to grow by 8-10 per cent every year.
2.	2015	15UCE308	Survey Practical – I	Global	Vision For Civil Engineering 2025 ACSE
3.	2015	15UCE407	Survey Practical II	Global	Vision For Civil Engineering 2025 ACSE
4.	2015	15UCE408	Hydraulic Engineering Laboratory	Global	Vision For Civil Engineering 2025 ACSE
5.	2015	15UCE504	Environmental Engineering	Global	Vision For Civil Engineering 2025 ACSE
6.	2015	15UCE507	Soil Mechanics Laboratory	Global	Vision For Civil Engineering 2025 ACSE
7.	2015	15UCE508	Environmental Engineering Laboratory	Global	Vision For Civil Engineering 2025 ACSE
8.	2015	15UCE608	Technical Project	Global	Vision For Civil Engineering 2025 ACSE

9.	2015	15UCE701	Design of Reinforced Concrete and Brick Masonry Structures	Global	As per ASCE vision on Global future development
10.	2015	15UCE702	Estimation, Costing and Valuation Engineering	Global	Vision For Civil Engineering 2025 ACSE
11.	2015	15UCE706	Concrete and Highway Engineering Laboratory	Global	Vision For Civil Engineering 2025 ACSE
12.	2015	15UCE707	Software Applications Laboratory	Global	Vision For Civil Engineering 2025 ACSE
13.	2015	15UCE804	Project Work	Global	Vision For Civil Engineering 2025 ACSE

For Regulation 2019

Table :1.1.1b1		**For R2019**	**Name of the UG Program: B.E. Civil Engineering**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2019	19UEE207	Computer Aided Building Drawing	Global	National Information Center of Earthquake Engineering (NICEE)
2.	2019	19UCE302	Engineering Geology & Construction Materials	Global	Future World Vision: Infrastructure Reimagined May 2019 - ASCE
3.	2019	19UCE308	Material Testing Lab	Global	Future World Vision: Infrastructure Reimagined May 2019 – ASCE
4.	2019	19UCE309	Surveying Lab	Global	Future World Vision: Infrastructure Reimagined May 2019 – ASCE

5.	2019	19UCE928	Instrumentation & Sensor Technologies For CE Applications	Global	Future World Vision: Infrastructure Reimagined May 2019 – ASCE IEEE standards
6.	2019	19UCE405	Highway Engineering	Global	Based on the Visions of GOI- MOST and NHAI
7.	2019	19UCE404	Waste Water Engineering	Global	Allied Vision and mission of WHO
8.	2019	19UCE407	Water and Waste water Engineering Lab	Global	Allied Vision and mission of WHO
9.	2019	19UCE607	Product development Project	Global	Vision of the Ministry of Skill development & Entrepreneurship
10.	2019	19UCE703	Smart City Technologies	Global	Future World Vision: Infrastructure Reimagined May 2019 – ASCE Smart city Missions of GOI.
11.	2019	19UCE608	Software Applications Lab	Global	Vision of the Ministry of Skill development & Entrepreneurship
12.	2019	19UCE702	Estimation, Costing & Valuation Engineering	Global	Construction Industry Development Council
13.	2019	19UCE803	Project Work	Global	Vision of the Ministry of Skill development & Entrepreneurship
14.	2019	19UCE917	Structural Dynamics and Earthquake Engineering	Global	National Information Center of Earthquake Engineering (NICEE)
15.	2019	19UCE920	Disaster Preparedness & Planning	Global	Future World Vision: Infrastructure Reimagined May 2019 – ASCE, National Information Center of Earthquake Engineering (NICEE) And Objectives of NDMA

For Regulation 2015

Table :1.1.1a1	For R2015	Name of the UG Program : B.Tech. Chemical Engineering			
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2015	15UCH209	Principles of Mechanics	Global	This subject teach the students to study about various materials available in industries and allow him to study the stress and strain associated with the materials
2	2015	15UCH301	Introduction to Chemical Engineering	National	This course provides the overview of chemical engineering, Concepts of chemical engineering, concepts of unit operations and unit processes and modern view of chemical engineering accompanied with industrial visits.
3	2015	15UCH302	Organic Chemistry	National	This course provides the basics of type of components in which organic reaction are taking place and also to know the preparation of the essential organic compounds.
4	2015	15UCH303	Fluid Mechanics for Chemical Engineering	Global	To impart to the student knowledge on fluid properties, fluid statics, dynamic characteristics for through pipes and porous medium, flow measurement and fluid machineries.
5	2015	15UCH304	Chemical Process Industries - I	Global	Course is designed to integrate various courses such as chemistry, unit operations, mechanical operation, stoichiometry etc., and to give the young chemical engineers some comprehension on various fields of

					production into which he will enter or with which he will be affiliated during the course of study or after completion of the study.
6	2015	15UCH307	Organic Chemistry Laboratory	Global	Learn basic principles involved in analysis and synthesis of different organic derivatives.
7	2015	15UCH308	Chemical Engineering Fluid Mechanics Laboratory	Global	Determine experimentally the flow characteristics of fluids and also to determine the efficiency of the flow measuring devices and fluid transport machineries.
8	2015	15UCH401	Chemical Engineering Thermodynamics I	Global	This course provides the basic concept of law of thermodynamics, PVT behavior of fluids, thermodynamic property relations and their application to fluid flow, power generation and refrigeration processes.
9	2015	15UCH402	Chemical Process Calculations	Global	This course aims to acquire a concept of degree of freedom and its application to solution of mass and energy balance equations for single and network of units.
10	2015	15UCH403	Mechanical Operations	Global	The course is designed to the impart knowledge in identifying the important physical mechanisms occurring in processes involving principles of size reduction, particle dynamics, filtration, mixing of different components and separation of particles.
11	2015	15UCH404	Physical Chemistry	National	This course provides the basic concept of kinetics and mechanisms of chemical reactions, fundamentals of electrochemistry and its Applications. It

					includes phase rule, distribution law and surface Chemistry.
12	2015	15UCH405	Chemical Process Industries - II	Global	The Course is designed to impart the knowledge on various aspects of production engineering and enable the students to understand the practical methods of production in a chemical factory. Also aims at facilitating the students to understand the various industries applications and needs.
13	2015	15UCH407	Physical Chemistry Laboratory	National	To determine experimentally various properties of the chemical compounds and to determine and estimate kinetics values, and other properties of chemicals.
14	2015	15UCH408	Mechanical Operations Laboratory	Global	To enable the students to develop a sound working knowledge on different types of crushing equipments and separation characteristics of different mechanical operation separators
15	2015	15UCH409	Technical Analysis Laboratory	National	To determine experimentally the various elements and compounds used in chemical engineering.
16	2015	15UCH501	Chemical Engineering Thermodynmics II	Global	In this course, more emphasis is given to the treatment of properties of solution, phase equilibrium, Chemical reaction equilibrium and refrigeration Cycles.
17	2015	15UCH502	Mass Transfer I	Global	This course provides the basic concept of mass transfer coefficient and theories of mass transfer. It includes design of cooling tower, Dryer and crystallization.
18	2015	15UCH503	Heat Transfer	Global	To enable the students to learn heat transfer by conduction, convection and

					radiation and heat transfer equipments like evaporator and heat exchanger.
19	2015	15UCH504	Instrumental Methods of Analysis	National	This course provides basic knowledge on various analytical instruments and methods for accurate chemical analysis.
20	2015	15UCH507	Process Equipment Design and Drawing I	Global	To integrate the various courses such as Chemistry, Engineering mechanism, Engineering Graphics, unit operation, Mechanics of solids, Materials Technology for comprehension approach to the design of the process equipments.
21	2015	15UCH508	Heat Transfer Laboratory	Global	To determine experimentally the heat transfer coefficient of different fluid in different equipments.
22	2015	15UCH601	Mass Transfer II	Global	This course on Mass transfer II aims to emphasize the need for and provide an in depth coverage of various unit operation like Absorption, Distillation, Extraction, Leaching and adsorption. This course also discovers the latest separation process like Ion exchange and Membrane separation technology.
23	2015	15UCH602	Chemical Reaction Engineering I	Global	Chemical Reaction engineering (CRE) course is for Graduate students with a background in Chemical Engineering. The course entails design of chemical reactors for complex reaction systems. It presents reaction kinetic principles, performance equations, size comparison, and non-ideality of different types of reactors.

24	2015	15UCH603	Process Instrumentation Dynamics and Control	Global	This Course provides an in depth knowledge of various open and closed loop systems and its responses, control loop components and stability of control systems along with instrumentation. Also emphasize on mathematical techniques and tools to control the system based on applications.
25	2015	15UCH607	Mass Transfer Laboratory	Global	To gain knowledge on the determination of important data for the design and operation of the process equipments
26	2015	15UCH608	Technical Project	Global	The objective of the project is to enable the students to work in groups of not more than four members in each group on a project involving analytical, experimental, design or combination of these in the area of Chemical Engineering. Each project shall have a guide. The student is required to do literature survey, formulate the problem and form a methodology of arriving at the solution of the problem. The evaluation is based on continuous internal assessment by an internal assessment committee for100 marks.
27	2015	15UCH701	Transport Phenomena	Global	The Course is designed to impart the knowledge on various types of fluids, their flow characteristics and different mathematical models applied to actual situations in shell balance approach in laminar flow. Also aims at facilitating the students to understand the various

					mechanisms of fluids in motion under different conditions.
28	2015	15UCH702	Chemical Engineering Process Economics and Industrial Management	Global	This course provides the basic concept of cost estimation, feasibility analysis, management, organization and quality control that will enable the students to perform as efficient managers.
29	2015	15UCH703	Chemical Reaction Engineering II	Global	In this subject emphasis is on heterogeneous reaction engineering and catalysis, leading finally to design considerations. The first part of this subject deals with Catalysis. Kinetics and design of reactors for non-catalytic fluid-fluid and fluid-particle reactions follows.
30	2015	15UCH707	Chemical Reaction Engineering Laboratory	Global	To determine experimentally the kinetics and rate constants of reactions in different types of reactors.
31	2015	15UCH708	Process Equipment Design and Drawing II	Global	To gain practical knowledge on the shape and drawing of the process equipments
32	2015	15UCH709	Process Control Laboratory for Chemical Engineers	Global	To determine experimentally the methods of controlling the processes including measurements using process simulation techniques.
33	2015	15UME801	Professional Ethics	Global	To impart knowledge on a values-based approach and provide a method of thinking about and dealing with ethical issues in the work place. To explain what a profession is and what it means to act professionally.

34	2015	15UCH801	Project Work	Global	The objective of the project is to make use of the knowledge gained by the student at various stages of the degree course. Each student is required to submit a report on the project assigned to him by the department. The report should be based on the information available in the literature or data obtained in the laboratory/industry. Students, in addition to the home problem will be permitted to undertake industrial/ consultancy project work, outside the department, in industries/Research labs for which proportional weightage will be given in the final assessment.
35	2015	15UCH901	Food Science and Technology	Global	To enable the students to learn to design processing equipments for Food Industries.
36	2015	15UCH903	Petroleum Refinery Engineering	Global	To make the students understand petroleum engineering principles, their application to petroleum and natural gas manufacturing problem
37	2015	15UCH906	Polymer Technology	Global	To enable the students to compute molecular weight averages from the molecular weight distribution, Condensation polymerization and transition in polymers.
38	2015	15UCH920	Process Plant Utilities	Global	To enable the students to understand the process plant utilities and optimization techniques to optimize various parameters in chemical industries.

39	2015	15UCH922	Drugs and Pharamaceutical Technology	Global	To give the students an understanding of the polytechnical nature of engineering and drug discovery in the pharmaceutical industry involving Chemical Engineering.
40	2015	15UCH923	Chemical Process Plant Safety	Global	To enable the students to become a skilled person in hazard analysis and finding out the root cause of an accident. Gain knowledge in devising safety policy and procedures to be adopted to implement total safety in a plant
41	2015	15UCH951	Corrosion Science and Engineering	Global	To explain various sources of corrosion To know in depth of its principles, types, protection, methods of corrosion
42	2015	15UCH955	Industrial Solid Waste Management	Global	To provide comprehensive overview of solid and hazardous waste management. To provide knowledge on solid waste management design aspects.
43	2015	15UCH861	Matlab for Chemical Engineering	Global	To explain basics of numerical methods calculations involved in chemical process systems. To know in depth of mathematical modeling of a given physical or chemical systems with the simulation.
44	2015	15UCH871	Membrane Technology	Global	To attain a broad comprehension of Membrane technology for water purification process.

For Regulation 2019

Table :1.1.1b1		For R2019	Name of the UG Program: B.Tech. Chemical Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National / Regional / Global Developmental needs**	**Description about the need**
1	2019	19UCH920	Nanotechnology	Global	To make students understand the use of concept of nanotechnology and nanoscience in the chemical industries and in consumer products. In current scenario, engineers are finding a wide variety of ways to deliberately make materials at the nanoscale to take advantage of their enhanced properties such as higher strength, lighter weight, increased control of light spectrum, and greater chemical reactivity then their larger scale counterparts. So in order to move towards advanced materials and devices students should have the knowledge of nano science.
2	2019	19UCH605	Process Computation Lab	Global	The von Neumann architecture, machine language, assembly language, high level programming languages, compiler, interpreter, loader, linker, text editors, operating systems, flowchart; Basic features of programming (Using C): data types, variables, operators, expressions, statements, control structures, functions; Advanced programming features: arrays and pointers, recursion, records (structures), memory management, files,

					input/output, standard library functions, programming tools, testing and debugging; Fundamental operations on data: insert, delete, search, traverse and modify; Fundamental data structures: arrays, stacks, queues, linked lists; Searching and sorting: linear search, binary search, insertion-sort, bubble-sort, selection-sort, radix-sort, counting-sort; Introduction to object-oriented programming
3	2019	19UCH703	Process Design and Simulation Lab	Global	Convergence techniques, solution of linear and non-linear algebraic equations, solution of coupled ordinary differential equations. Importance of VLE/ LLE calculations for process simulation. Process modeling and simulation, Information Flow diagram, modeling of different process equipment - heat exchangers, furnaces, flash drum, distillation, absorption, other staged / differential contacting processes, reactors etc. Process flowsheeting and simulators - Simulator components and structures, Salient features of simulators like ASPEN etc. Industrial Automation-Real time systems and Process optimization, Concepts of process economics. Process Integration-Pinch Technology, Heat exchangers network design, MER design, Energy trade off for reducing number of units, Stream splitting, optimization of mass exchangers network and water system.Use of AI (Fuzzy logic,

					ANN, GA etc.) techniques in process diagnosis, control and optimization.
4	2019	19UCH603	Process Equipment Design	Global	Equipment design involves modifications and additions to existing plants or creating design layouts of plant / equipments. With rapid rate of increase in the advancement of knowledge, it is important that the students should know the relevant application for equipment design. It has been observed conclusively that practice in using the reference literature and software has helped the students to secure jobs and also to perform better in profession.
5	2019	19UCH912	Environment Impact Assessment	Global	To know the various types of environmental pollution. To make aware the impact due to various types of pollutants and their assessment technique.
6	2019	19UCH702	Process Modelling and Simulation	Global	Convergence techniques, solution of linear and non-linear algebraic equations, solution of coupled ordinary differential equations. Importance of VLE/ LLE calculations for process simulation. Process modeling and simulation, Information Flow diagram, modeling of different process equipment - heat exchangers, furnaces, flash drum, distillation, absorption, other staged / differential contacting processes, reactors etc. Process flowsheeting and simulators - Simulator components and structures, Salient features of simulators like ASPEN etc. Industrial Automation-Real time systems and Process optimization, Concepts of process

					economics. Process Integration-Pinch Technology, Heat exchangers network design, MER design, Energy tradeoff for reducing number of units, Stream splitting, optimization of mass exchangers network and water system. Use of AI (Fuzzy logic, ANN, GA etc.) techniques in process diagnosis, control and optimization.
7	2019	19UCH921	Extractive Metallurgy	Global	Knowledge of various techniques, unit process and operations used in metal extraction and refining. To develop the leaders for coming future who are able to bring new and economic technologies for metal extraction.
8	2019	19UCH604	Chemical Process Plant Safety	Global	Become a skilled person in hazopardhazarel analysis and finding out the root cause of an accident. Gain knowledge in devising safety policy and procedures to be adopted to implement total safety in a plant.
9	2019	19UCH924	Nuclear Science and Technology	Global	The discipline includes a study of fissile material and fission systems, fusion interaction and maintenance of nuclear fission systems, nuclear power plants, nuclear reactors, and nuclear war weapons, nuclear fusion, medical applications, nuclear safety, radiation, nuclear proliferation, management of heat & thermodynamics transport, nuclear waste disposal, nuclear proliferation, collection of nuclear fuel, and the effects of radioactivity on the environment.

10	2019	19UCH907	Computational Fluid Dynamics	Global	This course is an introduction to numerical methods and MATLAB®: Errors, condition numbers and roots of equations. Topics covered include Navier-stokes; direct and iterative methods for linear systems; finite differences for elliptic, parabolic and hyperbolic equations; Fourier decomposition, error analysis and stability; high-order and compact finite-differences; finite volume methods; time marching methods; Navier-stokes solvers; grid generation; finite volumes on complex geometries; finite element methods; spectral methods; boundary element and panel methods; turbulent flows; boundary layers; and Lagrangian coherent structures (LCSs)

For Regulation 2015

Table :1.1.1a1		For R2015	Name of the UG Program: B.E. Agriculture Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2016	15UAG204	Principles of Agricultural Engineering	National	It deals with the basic engineering operations in the agricultural operations
2	2016	15UAG206	Agricultural Engineering Practices Laboratory	National	It enhances the practical knowledge on the difficulty in agricultural operations
3	2016	15UAG302	Unit Operations in Agricultural Processing	Global	It develops the fundamental knowledge in processing techniques of agricultural produce
4	2016	15UAG306	Principles and Practices of Crop Production	National	It helps to learn the principles of agricultural and horticultural crop production
5	2016	15UAG307	Crop Husbandry Laboratory	National	It provides hands on experience in crop production practices in wet and drylands
6	2016	15UAG402	Post-Harvest Technology	National	It provides fundamental knowledge on engineering materials of agro produce, their processing and storage
7	2016	15UAG403	Farm Tractors	National	It offers knowledge on working principle of tractor and power tillers
8	2016	15UAG404	Soil and Water Conservation Engineering	Local	It helps to understand the erosion and their related issues and provides solutions and concepts for soil and water management

9	2016	15UAG406	Surveying for Agriculture	Local	It familiarizes the basic principles of surveying and its application in agriculture and irrigation projects
10	2016	15UAG407	Surveying Laboratory	Local	It helps in acquiring skill in various surveying and levelling instruments
11	2016	15UAG408	Tractors and Farm Engines Laboratory	National	It makes the student knowledgeable in dismantling and assembling tractor systems
12	2016	15UAG501	Irrigation and Drainage Engineering	National	It helps in understanding the basic concepts of planning, design and management of irrigation and drainage systems in agricultural lands
13	2016	15UAG502	Tillage and Sowing Implements	Local	It helps in acquiring knowledge about the tillage tools and implements for farming operations
14	2016	15UAG503	Plant Protection and Harvesting Equipments	Global	It provides the concepts of plant protection and different types of machinery and labor-saving equipment in agricultural production
15	2016	15UAG504	Heat and Mass Transfer for Agricultural Engineers	Global	It helps the students to learn thermal analysis of agro produce and sizing of heat exchangers
16	2016	15UAG507	Tillage and Sowing Equipments Laboratory	Local	It exposes the students to various tillage implements and operations in the field
17	2016	15UAG508	Plant Protection and Harvesting Equipments Laboratory	Global	It provides hands on training on using different types of weeders, sprayers and harvesting equipments

18	2016	15UAG601	Solar and Wind Energy Engineering	Global	It provides knowledge on solar and wind energy applications, principle and operation
19	2016	15UAG602	Hydrology and Water Resources Engineering	Local	It helps in understanding the hydrological aspects of water availability and their efficient utilization in local bodies
20	2016	15UAG603	Design of Agricultural Machinery	National	It enriches the student's skill on basic concepts of design of agricultural machineries
21	2016	15UAG607	CAD for Agricultural Engineering	National	It enhances the student's skill set on drafting agricultural machineries using manual as well as computer aided methods
22	2016	15UAG701	Bio-Energy Resource Technology	Global	It provides fundamental knowledge on the importance of Bio resources, Bio energy and reactors
23	2016	15UAG702	Dairy and Food Engineering	Global	It exposes the students to dairy industry, processing of milk, manufacture of dairy products, effluent treatment in dairy industry
24	2016	15UAG703	Farm Management and Finance	Global	It helps in acquiring knowledge on Farm financial analysis, Investment and Budgeting for farms
25	2016	15UAG905	Micro Irrigation	National	It provides fundamental knowledge about pumps in irrigation use
26	2016	15UAG913	Bio and Thermochemical conversion of biomass	Global	It helps the students to acquaint the biological and thermal recycling of wastes
27	2016	15UAG902	Storage and packaging technology	National	It provides knowledge on principles of spoilage and storage, different

					storage methods and packaging techniques
28	2016	15UAG901	Refrigeration and air conditioning for agricultural engineers	Local	It helps in understanding the basic principles and design of refrigeration and air conditioning systems
29	2016	15UAG862	Mushroom Cultivation Technology	Local	It imparts the knowledge on mushroom production methods
30	2016	15UAG863	Vermicompost Technology	Local	It provides knowledge on vermicomposting of agro residues and its utilization
31	2016	15UAG864	Green house technology	National	It imparts the knowledge about greenhouse control environment, their planning and design
32	2016	15UAG865	Water harvesting technology	National	It helps to learn different types of water harvesting techniques and its maintenance

For Regulation 2019

Table :1.1.1b1		**For R2019**	**Name of the UG Program: B.E. Agriculture Engineering**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2019	19UAG201	Introduction to Agricultural Engineering	National	It helps to learn basic Applications in agricultural engineering.
2	2019	19UCS108	Problem Solving and Python programming	Global	It deals with the basic Programming operations in the agriculture technology

3	2019	19UCS 110	Problem Solving and Python programming lab	Global	It enhances the practical knowledge on Programming
4	2019	19UEE221	BEEE laboratory	National	It develops the fundamental knowledge in processing techniques of agricultural produce
5	2019	19UI426T	Object oriented programming in Python	Global	It deals with the basic Programming operations in Python.
6	2019	19UI426T	Object oriented programming with laboratory	Global	It enhances the practical knowledge on Python Programming
7	2019	19UAG502	Agricultural Farm Machinery	Global	It deals with the design and operations in agriculture farm machinery equipment's
8	2019	19UAG906	Landscape Irrigation Design and Management	Global	It provides fundamental knowledge about Landscape Irrigation Design

For Regulation 2015

Table :1.1.1a1	For R2015	Name of the UG Program : B.E. Biomedical Engineering			
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional/ Global Developmental needs**	**Description about the need**
1.	2017	15UBM209	Sensors and Measurement Techniques	National	To get knowledge about biomedical measurements used in hospitals
2.	2017	15UBM303	Biochemistry	Global	To understand physical and chemical response of various devices when interfaced with human body
3.	2017	15UBM304	Biomedical Instruments	Global	To understand working and maintenance of biomedical instruments
4.	2017	15UBM401	Analog and Digital Integrated Circuits	National	To design biomedical instruments
5.	2017	15UBM403	Medical Physics	National	To know the latest technologies
6.	2018	15UBM503	Bio Control System	Global	To design biomedical instruments
7.	2018	15UBM504	Principles of Digital Signal Processing	Global	To acquire knowledge about bio signals
8.	2018	15UBM601	Medical Imaging Equipment	National	To analyze the working of Medical Imaging Equipment
9.	2018	15UBM602	Image Processing Techniques	Global	To acquire knowledge about processing and development of medical images
10.	2018	15UBM703	Neural Networks and Pattern Recognition	Global	To acquire knowledge about processing and development of medical images
11.	2018	15UBM903	Intellectual Property Rights	Global	To get knowledge about patent drafting

12.	2018	15UBM919	Neuroscience	Global	To develop biomedical instruments
13.	2018	15UBM920	Cancer Biology	Global	To develop biomedical instruments
14.	2018	15UBM921	Robotics and Automation in medicine	Global	To develop biomedical instruments
15.	2018	15UBM953	Forensic Science in Health Care	National	To acquire knowledge about clinical methodology
16.	2018	15UBM954	Nuclear Medicine	National	To develop biomedical instruments

For Regulation 2019

Table :1.1.1b1		For R2019	Name of the UG Program: B.Tech. Computer Science and Business Systems		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2019	19UCB106	Fundamentals of Computer Science	Global	Familiarize with the concepts of Computer Science and understand Programming Skills.
		19UCB109	Computer Programming Laboratory		
2	2019	19UCB406	Python Programming	Global	Familiarize with the basic Programming in Python..
3	2019	19UCB402	Computer Networks	Global	Understand the concepts of Networking and help to connect people for Information Sharing
		19UCB407	Computer Networks Laboratory		
4	2019	19UCB504	Mobile applications Development & Services	Global	Mobile application provides a platform to companies by which they can get engaged with their customers in real-time. Mobile Application Plays important role in Everyday life.
5	2019	19UCB604	Information Security	Global	Information Security protects against cyber attacks and security threats. The services of information security provider will mitigate digital information risks and keep systems running without disruption.
6	2019	19UCB603	Artificial Intelligence	Global	Artificial intelligence (AI) are being embraced by greater numbers of individuals, businesses, and governments as rising efficiency and productivity are permitting exponential growth in certain sectors of the global economy.

7	2019	19UCB904	Cloud Micro Services and Application	Global	Cloud Microservies allows people access to the same kinds of applications through the internet. cloud servers free up the memory and computing power of individual computers .
8	2019	19UCB908	Introduction to Block chain Technology and Application	Global	A block chain technology is an online ledger that user data structure, to simplify the way we transact. It allows users to manipulate the ledger in a secure way without the help of a third party. It allows a free crypto currency through a decentralized environment.
9	2019	19UCB909	Introduction to Industry 4.0	Global	Industry4.0 enhance productivity, improving the customer experience, production automation, and achieving manufacturing and supply chain integration.
10	2019	19UCB911	Data Science for Engineering	Global	Data Science is widely used in various industry domains, including marketing, healthcare, finance, banking, policy work. It is applied wherever big data comes to picture.
11	2019	19UCB927	Speech and Natural Language Processing concepts	Global	Natural language processing (NLP) is a subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data. The goal is a computer capable of "understanding" the contents

					of documents, including the contextual nuances of the language within them.
12	2019	19UCB930	Business Intelligence	Global	Business intelligence in a business is to help corporate executives, business managers, and other operational workers make better and more informed business decisions. Companies also use business intelligence to cut costs, identify new business opportunities, and spot inefficient business processes.

For Regulation 2019

Table :1.1.1b1	For R2019	Name of the UG Program: B.Tech. Biotechnology			
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional/ Global Developmental needs**	**Description about the need**
1.	2019	19UBT211	Biochemistry Laboratory	Global Developmental need	Students are equipped with theoretical and practical knowledge related to qualitative and quantitative analysis of biomolecules in global standard.
2.	2019	19UBT205	Microbiology	Global Developmental need	Understand the microbial control concepts which helps them in quality analyst in industries
3.	2019	19UBT206	Principles of Biochemistry	Global Developmental need	Students were able to understand the basic concepts of biomolecules and their metabolic pathways which will make them competent in global research.
4	2019	19UBT308	Instrumental Methods of AnalysisLaboratory	Global Developmental need	Understand the concepts of spectroscopy, chromatography and electrophoresis which will make them competent in global analytical research.
5	2019	19UBT403	Basic Industrial Biotechnology	Global Developmental need	Students were able to understand the basic concepts of fermentation and other unit operations which gives them the idea of Industrial production
6	2019	19UBT508	Molecular Biology Laboratory	Global Developmental need	Understand the concepts of DNA isolation and its engineering along with its analysis using

					electrophoresis and spectroscopy techniques which will make them competent in global molecular research.
7	2019	19UBT509	Bioprocess Principles Laboratory	Global Developmental need	Students were able to understand the basic concepts in enzyme production, analysis and microbial cultivation along with ways to optimization which gives them ease them in the field of Bioprocess research
8	2019	19UGM507	Creative Thinking and Innovation	Global Developmental need	Students were able to think in a creative way and develop the innovative ideas for development and upliftment of the society.
9	2019	19UGS533	Interpersonal Skills Laboratory	Global Developmental need	Students were able to develop their interpersonal skills and can develop as a team player which will be helpful in the occupation.
10	2019	19UBT608	Genetic Engineering Laboratory	Global Developmental need	Understand the concepts of gene cloning and expression studies along with its analysis which will make them competent in global genetic research.
11	2019	19UBT609	Bioprocess Engineering Laboratory	Global Developmental need	Students were able to understand the basic concepts in bioprocess and the fermentor handling which gives them the idea and exposure of Industrial production of biomolecules
12	2019	19UGS631	Logical Reasoning and Aptitude	Global Developmental need	Students were able to think logically and find reason for a

					solution instantly which will help them in their career development
13	2019	19UGS632	Soft skills and Communication Laboratory	Global Developmental need	Students were able to develop their communication and soft skills which will give them a good gesture and confidence to present themselves and their ideas in their career growth and entrepreneurship activities.
14	2019	19UBT703	Bioinformatics	Global Developmental need	Understand the concepts of computational approaches and modelling of biomolecules and its analysis which will make them competent in the advance biotechnological research
15	2019	19UBT708	Downstream Processing Laboratory	Global Developmental need	Students were able to understand the basic concepts of recovery, purification and packaging of biomolecules which gives them exposure and skill needed for Industrial purification of biomolecules
16	2019	19UBT709	Immunology Laboratory	Global Developmental need	Students were able to understand the basic immunological concepts and cell signaling pathways which will be helpful in the diagnostics and disease studies and in the industries which produce immunological products.

For Regulation 2021

Table :1.1.1b1		For R2021	Name of the UG Program: B.Tech. Artificial Intelligence and Data Science		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2021	21UAD204	Foundations of Data Science	Global	Understand the concepts of data science and Predict the information based on decisions.
		21UAD212	Data Science using R Programming		
2.	2021	21UAD303	Object Oriented Programming using Python	Global	Familiarize with the basic Programming in Python.
3.	2021	21UAD402	Artificial Intelligence	Global	Artificial intelligence (AI) are being embraced by greater numbers of individuals, businesses, and governments as rising efficiency and productivity are permitting exponential growth in certain sectors of the global economy.
4.	2021	21UAD405	Internet of Things and Sensors	Global	Internet of Things (IoT) is a new paradigm that has changed the traditional way of living into a high tech life style. Smart city, smart homes, pollution control, energy saving, smart transportation, smart industries are such transformations due to IoT.it plays important role in Everyday life.

5.	2021	21UAD503	Machine Learning Techniques	Global	machine learning could provide us with readily available 'personal assistants' to help manage our lives
6.	2021	21UAD602	Deep Learning	Global	Deep learning aims to mimic the way the human mind digests information and detects patterns and eliminates some of data pre-processing that is typically involved with machine learning
7.	2021	21UAD702	Natural Language Processing	Global	Natural language processing helps computers communicate with humans in their own language and scales other language-related tasks and allows machines to break down and interpret human language

For Regulation 2021

Table :1.1.1b1		For R2021	Name of the UG Program: B.E. Computer Science and Design		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2021	21UCD305	Design Thinking	Global	Design thinking revolves around a deep interest to understand the people for whom we design products and services. It helps innovators break free of counterproductive tendencies that thwart innovation. It is a social technology that blends practical tools with insights into human nature.
2	2021	21UCD405	UI UX Design	Global	UI UX Design combines the aspects of design with user experience to create interfaces that are easy to use, provide what the users need quickly, look great and produce an overall positive experience for the user. It also caters to user preferences, perceptivity and the emotional quotient. A good UX design increases usability, accessibility, functionality and enables a pleasurable user interaction with your website or app.
		21UCD408	UI UX Design Laboratory		
3	2021	21UCD406	Agile Methodologies	Global	Agile Methodologies help to develop products based on the changing needs of customers. Many organizations are adopting Agile methodologies to help

					increase team performance, improve customer satisfaction and increase project versatility. Organizations that have adopted Agile methodologies are able to respond to market dynamics and complete more of their projects successfully.
4	2021	21UIT501	Internet and Web Technology	Global	Web technology refers to the means by which computers communicate with each other using markup languages and multimedia packages. It gives us a way to interact with hosted information, like websites. It gives us access to information at a twenty-four-hour rate and you have access to almost anything online.
5	2021	21UCD502	Mobile Interactive Design	Global	Mobile Application Design provides a platform to companies by which they can get engaged with their customers in real-time. Mobile Application plays an important role in everyone's everyday life.
6	2021	21UCD601	Game Design and Development	Global	Game design and development emphasizes game programming within a core computing education to prepare students for careers in the game, simulation, modeling, training, and visualization industries.
		21UCD601	Game Programming Laboratory		
7	2021	21UCD602	IoT Design	Global	IoT uses internet, data storage, analytics, and sensors to become better efficient to meet our daily needs. The IoT design must weave together various design

					domains to develop a successful product. It provides a lot of convenience and comfort in the modern, fast-paced living.
8	2021	21UCD603	Multimedia Technologies	Global	Businesses use multimedia in daily life in form of presentations, training, marketing, advertising, product demos, networked communication, etc. It assists them to grab customer's and visitor's attention and effectively share information.
9	2021	21UCD702	Virtual Reality and Augmented Reality	Global	Augmented Reality (AR) enables digital information to be superimposed and integrated into our physical environment. It offers the possibility of reflecting digital components in the real world. Virtual reality (VR) is a completely immersive experience that replaces a real-life environment with a simulated one. By using a VR screen, the user can perceive and interact in the digital world.
		21UCD707	Virtual Reality and Augmented Reality Laboratory		
10	2021	21UCD703	3D Modeling and Animation	Global	3D models are used in nearly all forms of modern entertainment. From TV, to movies, video games, and even in online video content. A skilled artist can represent anything with 3D models. 3D modelers often have an animation background as well. 3D modeling is projected to save the lives of thousands of people across the globe.
		21UCD708	3D Modeling and Animation Laboratory		

For Regulation 2015

Table :1.1.1a2		For R2015	Name of the PG Program: M.E. CAD CAM		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2015	15PCD102	Advanced Finite Element Analysis	Global	To learn about computer simulation technique that allows any design, product or equipment to be analyzed in great detail
2	2015	15PCD304	Industrial training	Global	Student achieve more knowledge in various machine
3	2015	15PCD205	Internship	Global	Learn more about lab exercise

For Regulation 2015

Table :1.1.1a2		For R2015	Name of the PG Program: M.E. Communication Systems		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2015	15PCM101	Adaptive Signal Processing	National	It supports audio and speech processing, sonar, radar and other sensor array processing, spectral density estimation, statistical signal processing, digital image processing, data compression, video coding, audio coding, image compression, signal processing for telecommunications, control systems.
2.	2015	15PCM102	Advanced Radiation Systems	Global	An antenna is mainly used as a metallic device for radiating or receiving radio waves which is basically used for transmitting signals, transmitting antenna is used to transmit information and for receiving signal, receiving antenna is used at receiver end to receive signals.
3.	2015	15PCM104	Communication System Design Laboratory	National	Supports industries based on various simulation tools used in communication engineering
4.	2015	15PCM301	Wireless Communication Engineering	Local	Provides the knowledge on wireless channels and capacity of fading channels, diversity and combining scheme and multicarrier modulation techniques

5.	2015	15PCM201	Satellite Communication	Global	Applications on satellite communication supports various purpose for the global development.
6.	2015	15PCM202	Optical Networks	National	It plays an important role for the development of wireless and mobile communication.
7.	2015	15PCM521	Digital Communication Receivers	National	Synchronization and channel estimation from the standpoint of digital signal processing supports broadcasting applications.
8.	2015	15PCM522	Sensor Networks	Global	The development of wireless sensor networks was motivated by military applications such as battlefield surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, machine health monitoring, and so on.

For Regulation 2019

Table :1.1.1b2		**For R2019**	**Name of the PG Program : M.E. Communication Systems**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional / Global Developmental needs**	**Description about the need**
1.	2019	19PCM201	Advanced Communication Networks	Global	The current trend in telecommunications is towards ubiquitous availability of any application - at any time or any

					place, which is relevant in many areas, including wireless services and network economics research. Application of the developed techniques could lead to a more economic use of network resources.
2.	2019	19PCM202	Wireless and Mobile Communication	Global	The most important mediums of transmission of information from one device to other devices. In this technology, the information can be transmitted through the air without requiring any cable or wires or other electronic conductors, by using electromagnetic waves like IR, RF, satellite, etc.
3.	2019	19PCM501	Wireless Sensor Networks	Global	WSNs have grown substantially and have a momentous potential inverse applications in areas of environmental science, medical sciences, telecommunications, education services, agriculture, surveillance, military services, etc.
4.	2019	19PCM504	RF Circuits and Microwave Systems	Global	Carry out research and innovation in the core areas like RF Circuit analysis, sub system design and demonstrate the skills required in Defense, Microwave and RF communication sectors

5.	2019	19PCM506	Satellite Communication	Global	Satellites provides telecommunications, broadcasting, and data communications. Telecommunication services include telephone calls and services provided to telephone companies, as well as wireless, mobile, and cellular network providers.

For Regulation 2015

Table :1.1.1a2	**For R2015**	**Name of the PG Program: M.E. Computer Science and Engineering**			
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2015	15PCS102	Machine Learning Techniques	Global	Emerging Machine Learning techniques promise to reshape healthcare, agriculture and democracy in the developing world and show tremendous potential for helping to achieve sustainable development objectives globally.
2	2015	15PCS201	Data Science and Big Data Analytics	Global	Today's big challenge is that how data is collected; how data is analyzed; how analysis is used for policy making; Big data provide solutions as timeliness, accuracy and objectiveness.
3	2015	15PCS205	Network Security	National	Network Security plays the major role in securing a computer network and network infrastructure devices to prevent unauthorized access, data theft, network

					misuse and data modification while sharing the information across globally or nationally.
5	2015	15PCS509	Mobile Applications Development	Global	Mobile applications are easier to connect the marketers with their customers. They are the best marketing tools to develop business. The mobile application allows customers to have all information at their fingertips. Government of India takes the steps to develop mobile applications for various ministries. Mobile applications even can be developed for particular interest groups in some regions.
6	2015	15PCS511	Robotics	Global	Today, Robotics is a rapidly growing field, as technological advances continue; researching, designing, and building new robots serve various practical purposes, whether domestically, commercially and militarily. Robotics mainly focused on developing machines that can substitute for humans and replicate human actions.
7	2015	15PCS517	Cloud Application Development	Global	Cloud computing adds importance of IT by increasing access to technology that drives economic growth at the global, national, and local levels. It allows anyone — a start-up, an individual consumer, a government, or a small business — to access technology previously available only to large organizations.
8	2015	15PCS526	Social Network Analysis	Global	Social network analysis has emerged as a key technique in modern sociology. It has also gained a significant interest in

					anthropology, demography, communication studies, economics, geography, information science, organizational studies, political science, social psychology, development studies, and computer science.

For Regulation 2019

Table :1.1.1b2	**For R2019**	**Name of the PG Program : M.E. Computer Science and Engineering**			
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1	2019	19PCS513	Deep Learning Techniques	Global	The aim of Deep learning can process multiple sets of data, with the correct classification sets, recognize highly complex among them. Deep learning Techniques have shown outstanding results in solving robotic tasks in the areas of perception, localization, and control.
2	2019	19PCS514	Introduction to Intelligent Systems	Global	Intelligent systems are now designed to make decisions, often using real-time data. The role of Intelligent systems has the tremendous opportunities for economic development, national defense and Health care.
3	2019	19PCS525	Smart Sensors and Internet of Things	Global	The ultimate role of IOT is connected devices and services that have begun to reshape factories, hospitals, cities, and homes in terms of automation.

4	2019	19PCS602	Business Analytics	Global	Business Analytics nowadays is widely perceived as the helper of the business managers from the complexities of global business practices. Business Analytics is now promising to provide managers with the insight they need to make better and faster decisions, which would improve their competitive posture in the marketplace.

For Regulation 2015

Table :1.1.1a2		**For R2015**	**Name of the PG Program: M.E. Power Electronics and Drives**		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2015	15PPE101	Analysis of Electrical Machines	National	To meet the need of engineers whose job is to analyze the performance of electrical machines.
2.	2015	15PPE102	Analysis of Power Converters	National	To meet the need of engineers whose job is to analyze the performance of power converters.
3.	2015	15PPE103	Modern Power Semiconductor Devices	National	To meet the need of engineers whose job is to design a semiconductor device.
4.	2015	15PPE301	Special Electrical Machines and Controllers	National	To meet the need of engineers whose job is to analyze the performance of advanced electrical machines & controllers.
5.	2015	15PPE302	Digital Controllers in Power Electronics	National	To meet the need of engineers whose job is to develop a controlled

					automation system with the advanced techniques.
6.	2015	15PPE303	Project Work (Phase-I)	Local	To train the students to Develop a system using their backup knowledge and implementing their designs. To enhance the quality of evaluating their designed system with respect to different performance criteria.
7.	2015	15PPE201	Analysis of Inverters	National	To meet the need of engineers whose job is to analyze the performance of Inverters.
8.	2015	15PPE202	DC Drives and Control	National	To meet the need of engineers whose job is to design a complete drive system
9.	2015	15PPE203	AC Drives and Control	National	To meet the need of engineers whose job is to design a complete drive system.
10.	2015	15PPE205	Internship/Industrial Training	Local	Helpful to the students to Explore the preferred field of specialization.
11.	2015	15PPE401	Project Work (Phase-II)	Local	To train the students to Analyze the variety of issues in design concept through environmental issues and quality. Enhance the ability to Explain the systematic way of organizing various resources.
12.	2015	15PPE501	Power Electronics for PV and Wind Energy Systems	National	Develop prototype model of PV and wind energy system.

13.	2015	15PPE502	Digital Simulation of Power Electronic Systems	Global	To meet the need of engineers whose job is modelling of power electronics element
14.	2015	15PPE503	HVDC Systems and Control	Global	Imparts knowledge on operation, modelling and control of HVDC link.
15.	2015	15PPE504	Electromagnetic Field Computation and Modeling	National	Imparts in-depth knowledge on Finite Element Method in solving Electromagnetic field Problems.
16.	2015	15PPE505	Computer aided design of Power Electronics Circuits	Global	To meet the need of engineers whose job is to Design circuits using pre-manufactured building blocks such as power supplies, semiconductors, and integrated circuits
17.	2015	15PPE506	Electric Vehicles and Power Management	Global	Better for the environment. Less pollution: By choosing to drive an EV you are helping to reduce harmful air pollution from exhaust emissions.
18.	2015	15PPE508	Electric Power Quality	National	To maintain the power flow as a pure sinusoidal wave form and it should remain within specified voltage and frequency tolerances.
19.	2015	15PPE510	Solar and Energy Storage System	Regional	No greenhouse gas emissions are released into the atmosphere when you use solar panels to create electricity

20.	2015	15PPE511	Microcontroller Application in Power Converters	National	To process the digital signals microcontroller is very easy to do any specific task then controllers are used.
21.	2015	15PPE515	Wind Energy Conversion Systems	Regional	Wind energy doesn't pollute the air. Wind turbines don't produce atmospheric emissions that cause acid rain or greenhouse gasses.
22.	2015	15PPE516	VLSI Architecture and Design Methodologies	Global	To meet the *need* of engineers whose job is to design Microchips by combining thousands of transistors into a single chip.
23.	2015	15PPE517	Nanomaterials and Energy Systems	Global	nanomaterial in energy conversion and storage represents an opportunity to improve the performance, density and ease of transportation in renewable resources.
24.	2015	15PPE520	Smart Grid	National	It is cost-effective, help to conserve energy and improve the environment.
25.	2015	15PPE521	Distributed Generation and Micro Grid	National	Distributed generation and storage enables collection of energy from many sources and may lower environmental impacts and improve security of supply.

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Table :1.1.1b2		For R2019	Name of the PG Program :M.E. Power Electronics and Drives		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/ National/ Regional/ Global Developmental needs**	**Description about the need**
1.	2019	19PPE101	Power Electronic Converters	National	To meet the *need* of engineers whose job is to *analyze* the performance of power converters
2.	2019	19PPE102	Modeling and Analysis of Electrical Machines	National	To meet the *need* of engineers whose job is to *analyze* the performance of electrical machines
3.	2019	19PPE201	Electric Drives System	National	To meet the *need* of engineers whose job is to design a complete drive system
4.	2019	19PPE205	Mini project with seminar	Local	To Implement the novelty in mini projects and to Demonstrate the Technical ideas with good communication skill.
5.	2019	19PPE501	Advanced Power Electronic Circuits	National	To meet the *need* of engineers whose job is to analyze and design of Switched Mode Rectifiers, APFC, DC-DC converters &Resonant converters
6.	2019	19PPE503	Dynamics of Electrical Machines	National	To meet the *need* of engineers whose job is to Formulate the electrodynamics equations of all electric machines and analyze the performance characteristics

7.	2019	19PPE505	Advanced Control Of Electric Drives	National	Enhance the Ability of engineers to model the synchronous reluctance drives and to apply artificial intelligence to electrical machines and drives.
8.	2019	19PPE506	Automotive Electronics	National	To meet the *need* of engineers whose job is to determine the suitable device for the application and to design semiconductor device and its parameters and to design the protection circuits and control circuits and to determine the reliability of the system
9.	2019	19PPE507	Switched Mode and Resonant Converters	National	To meet the *need* of engineers whose job is to Design reactive elements in power electronic systems.
10.	2019	19PPE508	Modern Industrial Drives	National	To meet the *need* of engineers whose job is to analyze the principle of CNC machines.
11.	2019	19PPE510	Advanced Microcontroller based Systems	National	To meet the *need* of engineers whose job is to Analyze the FPGA and its Applications.
12.	2019	19PPE511	SCADA Systems and Applications	Global	To meet the *need* of engineers whose job is to Elucidate the SCADA communication, monitoring and control of SCADA.
13.	2019	19PPE512	FACTS and Custom Power Devices	Global	To meet the *need* of engineers whose job is to develop analytical modeling skills needed for modeling and analysis of such Static VAR Systems.

14.	2019	19PPE604	Bio Energy From Waste	National	To Implement the waste disposal & energy conversion techniques. To Apply the strategies for reducing environmental impacts. To Design the waste to energy plants

For Regulation 2015

Table :1.1.1a2		For R2015	Name of the PG Program: M.E. Structural Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	**Relevance to the Local/National/Regional /Global Developmental needs**	**Description about the need**
1.	2015	15PSE106	Structural Engineering Laboratory	Global	Vision For Structural Engineering ACSE
2.	2015	15PSE307	Project Work (Phase I)	Global	Vision For Structural Engineering ACSE
3.	2015	15PSE401	Project Work (Phase II)	Global	Vision For Structural Engineering ACSE
4.	2015	15PSE510	Computer Aided Analysis and Design	Global	Vision For Structural Engineering ACSE
5.	2015	15PSE512	Design of Steel Concrete Composite Structures	Global	Vision For Structural Engineering ACSE
6.	2015	15PSE521	Remote Sensing Techniques and GIS	Global	Vision For Structural Engineering ACSE
7.	2015	15PSE523	Durability of Concrete Structures	Global	Vision For Structural Engineering ACSE
8.	2015	15PSE525	Smart Materials and Smart Structures	Global	Vision For Structural Engineering ACSE

For Regulation 2019

Table :1.1.1b2		For R2019	Name of the PG Program : M.E. Structural Engineering		
S.No	**Syllabus Revision Year**	**Course Code**	**Course Name**	Relevance to the Local/ National/ Regional/ Global Developmental needs	**Description about the need**
1.	2019	19PGM701	Research Methodology and IPR (Mandatory Credit Course)	Global	Vision For Structural Engineering ACSE
2.	2019	19PGM801	Pedagogy Studies (Audit Course – I)	Global	Vision For Structural Engineering ACSE
3.	2019	19PSE103	Computing in Structures	Global	Vision For Structural Engineering ACSE
4.	2019	19PSE104	Advanced Concrete Laboratory	Global	Vision For Structural Engineering ACSE
5.	2019	19PGM802	English for Research Paper Writing (Audit Course – II)	Global	Vision For Structural Engineering ACSE
6.	2019	19PSE203	Structural Design Laboratory	Global	Vision For Structural Engineering ACSE
7.	2019	19PSE204	Structural Testing Laboratory	Global	Vision For Structural Engineering ACSE
8.	2019	19PSE205	Mini Project with Seminar	Global	Vision For Structural Engineering ACSE
9.	2019	19PSE301	Dissertation Phase I	Global	Vision For Structural Engineering ACSE
10.	2019	19PSE401	Dissertation Phase II	Global	Vision For Structural Engineering ACSE

11.	2019	19PSE517	Smart Materials and Smart Structures	Global	Vision For Structural Engineering ACSE
12.	2019	19PSE518	Design of Steel Concrete Composite Structures	Global	Vision For Structural Engineering ACSE
13.	2019	19PSE524	Structural Health Monitoring	Global	Vision For Structural Engineering ACSE
14.	2019	19PSE605	Smart City Technologies	Global	Vision For Structural Engineering ACSE