Self-Study Report (SSR) - Criterion-1

Information to be submitted by Departments/Directorates/Centres for Each Programme Offered

1	Department/Directorate/Centre/Institute:	Electrical Engineering Department, Institute of Technology, University of Kashmir, Zakura Campus
2	Name of the Programme Offered:	B.Tech (Electrical Engineering) and M.Tech (Power System and Control)
3	Departmental website link of the complete/updated syllabus:	https://iotee.uok.edu.in/Main/Default.aspx
4	Number of Courses in the Programme?	64(B.Tech.) 33(M.tech.)
5A	Number of New Courses introduced in the Programme since 2019?	21(B.Tech.) 33(M.tech.)

List of New Courses introduced since 2019:

5B

Course Code	*Course Title*	*Brief Description*
CHM2.04 (B.Tech)	Environmental Science	1. Students will be able to understand the composition of Environment. 2. Understand atmosphere and hydrosphere. 3. Effects and remedies to air and water pollution. 4. Sustainable development & methods of Energy Management.
MEC 2.07 B(B.Tech)	Workshop Practice B	To make te student able to: Select suitable technique for MECting a specific fabrication need. Acquire a minimum practical skill with respect to the different manufacturing methods and develop the confidence to design & fabricate small components for their project work and to participate in various national and international technical competitions. Have good practical exposure to different fabrication techniques. Create of simple components using different materials.
ELE 2.02 (B.Tech)	Principles of Electrical Engineering	1. Understand and Analyse basic electrical and magnetic circuits. 2. Understand basic types of electrical machines and their operating principles. 3. Measurement principles and basic electrical measurement devices,.
ELE 2.02 L (B.Tech)	Principles of Electrical Engineering Lab	1. To understand various basic electrical engineering devices and concepts practically. 2. Understand basic types of electrical machines and their operating principles.
PCCEE804L (B.Tech)	Advanced Power System Simulation And Scripting Lab	1. Power Simulation and Scripting; SimPowerSystems™Models 2. Challenges of Scripting for Power System Education 3.
OEC1ME705 (B. Tech)	Automatic Control	To maintain a desired value of a quantity or condition by measuring existing value, comparing it to the desired value and. employing the difference to initiate action for reducing this difference.
PEC3EE603 (B. Tech)	Electrical Machine Design	1. To understand the construction and performance characteristics of electrical machines. 2. Understand the various factors which influence the design: electrical, magnetic and thermal loading of Transformer. 3. Understand the various factors which influence the design: electrical and magnetic loading of Induction motor and synchronous machine. 4. Understand the principles of electrical machine design and carry out a basic design of synchronous machines.
PEC1EE704 (B.Tech)	Power Quality	1. Understand the different power quality issues to be addressed 2. Understand the recommended practices by various standard bodies on voltage & frequency, harmonics 3. Understand about compensation and compensators
OEC1EE605 (B.Tech)	Microcontroller 8051 & interf	1. To develop background knowledge of Computers and its memory System. 2. To understand the architecture of 8051. 3. To write programs for 8051 microcontrollers. 4. To understand the design of Microcontroller Applications.
PEC3EE604 (B. Tech)	Electrical Materials	1. Given a type of material, the students will be able to qualitatively describe the bonding scheme and its general physical properties, as well as possible applications in electrical engineering. 2. Students will be able to do comparative analysis of magnetic materials based upon their properties. 3. Students will be able to differentiate among various materials such as conductor and semiconductor based upon the internal composition.
PEC3EE704 (B. Tech)	Power Plant Engineering	1. Understand the layout, construction and working of the components inside a thermal power plant. 2. Understand the layout, construction and working of the components Diesel, Gas and Combined cycle power plants. 3. Understand the layout, construction and working of the components inside nuclear power plants. 4. Understand the layout, construction and working of the components inside Renewable energy power plants.
PEC2EE705 (B. Tech)	Design of Photovoltaic Syster	1. Understand the basics of Solar PV System 2. Understand the working principles of standalone and grid connected PV systems.
PEC2EE802 (B. Tech)	Electric Vehicles	1. To understand upcoming technology of hybrid system 2. To understand different aspects of drives application 3. Learning the electric Traction.
PEC3EE802 (B. Tech)	Smart Grid	1. Understand concept of smart grid and its advantages over conventional grid 2. Know smart metering techniques 3. Learn wide area measurement techniques 4. Understand the problems associated with integration of distributed generation & its solution through smart grid.
OECME506 (B. Tech)	Automation in manufacturing	To use technology and machines to perform specific tasks without the need for humans to intervene. The goal of automation is to increase efficiency, productivity, and accuracy in the production process, reducing manual labour and minimizing the risk of human error.
OEC2EE605 (B. Tech)	Energy Audit and Managemer	1. Understand the current energy scenario and importance of energy conservation. 2. Understand the concepts of energy management. 3. Understand the methods of improving energy efficiency in different electrical systems. 4. Understand the concepts of different energy efficient devices.
OEC3EE605 (B. Tech)	Python Data Analytics	1. To understand the importance of data science 2. To experience and apply Python's diverse array of packages.
OEC2EE703 (B. Tech)	Fuzzy Logic and Neural Netw	1.Introduction to Neural networks and various neural network models 2. Various important concepts related with neural networks 3. Various learning paradigms in artificial neural networks 4. How fuzzy systems are used to solve problems of uncertainties. 5. How various artificial intelligence methods are clubbed to introduce hybrid systems.
OEC3EE703 (B. Tech)	Energy Management in Buildi	1.To understand the energy use and conservation options in buildings. 2. To understand the concepts of heat transmission in building 3. To learn the lightning fundamentals and day lightning use and estimation. 4. To understand the ASHRAE Methods and standards for estimates of Heating, cooling and Ventilation.
OEC2ME705 (B. Tech)	Engineering Statistics	To combine engineering and statistics using scientific methods for analyzing data. Engineering statistics involves data concerning manufacturing processes such as: component dimensions, tolerances, type of material, and fabrication process control.
HSMCEE801 (B.Tech)	Organisation of Engineering Systems and Human Resources and Management	1. An understanding of the principles of Organisation of engineering systems & HR Management 2. The ability to perceive issues from an overall management perspective. 3. The means to analyse developments in an organisation's systems, functioning and capabilities 4. The means to effectively understand organizational functioning and its human elements 5. The ability to become a performance-oriented manager of systems
PCCPSC101 (M. Tech)	Power System Analysis	To study various methods of load flow and their advantages and disadvantages 2. Understand how to analyze various types of faults in power system 3. Understand power system security concepts and study the methods to rank the contingencies 4. Understand need of state estimation and study simple algorithms for state estimation Study voltage instability phenomenon.
PCCPSC102 (M. Tech)	Power System Operation, Control and Optimization	1. Recognize and formulate problems for operation and investments in power systems 2. Describe the basic principles of Linear programming, Quadratic programming, Nonlinear programming, and Semidefinite programming 3. Formulate the dual of an optimization problem and the optimality conditions (KKT) 4. Explain what locational marginal price is in electricity markets 5. Design and solve optimal power flow problems (DC-OPF, AC-OPF) 6. Understand and apply convex relaxations (e.g. semidefinite programming).
PCCPSC103 (M. Tech)	Dynamics Of Linear Systems	1. To understand the linear system and its functions 2. To understand the stability analysis of linear systems and implement the same in MATLAB.
PEC1PSC104 (M. Tech)	Renewable Energy Systems	1. To learn various renewable energy sources 2. To gain understanding of integrated operation of renewable energy sources 3. To understand Power Electronics Interface with the Grid.
PEC2PSC104 (M. Tech)	Smart Grid	1. Understand the concept of smart grid and its advantages over conventional grid. 2. Know smart metering techniques 3. Learn wide area measurement techniques 4. Understanding the problems associated with integration of distributed generation & its solution through smart grid.
PEC3PSC104 (M. Tech)	High Power Converters	1. Understand the requirements of high power rated converters 2. Understand the different topologies involved for these converters 3. Able to understand the design of protection circuits for these converters.
PEC4PSC104 (M. Tech)	Electrical Power Distribution Syste	1. Learning about power distribution system 2. Learning of SCADA System 3. Understanding Distribution Automation.
PEC5PSC104 (M. Tech)	Mathematical and Computational Methods for Power Engineering	1. To understand the relevance of mathematical methods to solve engineering problems. 2. To understand how to apply these methods for a given engineering problem.

	PCCPSC105 (M. Tech)	Research Methodolgy and IPR	1. Understand research problems 2. Learn about effective literature studies technical writing 3. Learn about patents & patent rights.
	PCCPSC106L (M. Tech	Advanced Power System Lab	To implement various power system concepts practically.
	PCCPSC201 (M. Tech)	Power Quality	1. Understand the different power quality issues to be addressed 2. Understand the recommended practices by various standard bodies like IEEE,IEC, etc on voltage & frequency, harmonics 3. Understanding Compensators for power quality problems.
	PCCPSC202 (M. Tech)	Power System Dynamics	1. Study of system dynamics and its physical interpretation 2. Development of mathematical models for synchronous machine 3. Modeling of induction motor.
	PCCPSC203 (M. Tech)	Nonlinear Systems and Control	1. Study of system dynamics and its physical interpretation 2. Development of mathematical models for nonlinear phenomena 3. Control of nonlinear systems.
	PEC1PSC204 (M. Tech)	Restructured Power Systems	1. Understand what is meant by restructuring of the electricity market 2. Understand the need behind requirement for deregulation of the electricity market 3. Understand the money, power & information flow in a deregulated power system.
	PEC2PSC204 (M. Tech)	Advanced Signal Processing	1. To understand the difference between discrete-time and continuous-time signals 2. To understand and apply Discrete Fourier Transforms (DFT).
	PEC3PSC204 (M. Tech)	Digital Protection of Power System	1. Study of numerical relays 2. Developing mathematical approach towards protection 3. Study of algorithms for numerical protection.
	PEC4PSC204 (M. Tech)	SCADA System and Applications	1. To understand what is meant by SCADA and its functions 2. To know SCADA communication 3. To get an insight into its application.
	PEC5PSC204 (M. Tech)	Electric and Hybrid Vehicles	1. To understand upcoming technology of hybrid system 2. To understand different aspects of drives application 3. Learning the electric Traction.
	PCCPSC205L (M. Tech)	Power Quality and Renewable Ener	To implement various concepts of power quality and renewable energy practically.
	PCCPSC206 (M. Tech)	Seminar	The students are required to prepare a seminar report and presentation based on the latest trends and technologies in their respective fields of study. The work is to be carried out in the 2nd semester of their course individually. Each student will have to select a topic of study duly approved by the faculty incharge of conducting the seminar. The student will have to prepare a seminar report and deliver a presentation before a panel of experts based on the seminar work carried by him/her.
	PEC1PSC301 (M. Tech)	Artificial Intelligence	1. Understanding fuzzy logic, Artifical Neural Networks. 2. Understanding GA & EP.
	PEC2PSC301 (M. Tech)	Power System Transients	1. Learn the reasons for occurrence of transients in a power system 2. Understand the change in parameters like voltage & frequency during transients 3. To know about the lightning phenomenon and its effect on power system.
	PEC3PSC301 (M. Tech)	FACTS	1. To learn the active and reactive power flow control in power system 2. To understand the need for static compensators 3. To develop the different control strategies used for compensation.
	PEC4PSC301 (M. Tech)	Industrial Load Modelling	1. To understand the energy demand scenario 2. To understand the modeling of load and its ease to study load demand industrially 3. To know Electricity pricing models 4. Study Reactive power management in Industries.
	PEC5PSC301 (M. Tech)	Optimal Control	1. To know the operation of closed and open loop optimal control. 2. Understand the adaptive control strategies. 3. Learn dynamic programming methods.
	PEC6PSC301 (M. Tech)	HVDC Systems	1. Understand the advantages of dc transmission over ac transmission. 2. Understand the operation of Line Commutated Converters and Voltage Source Converters. 3. Understand the control strategies used in HVDC transmission systems. 4. Understand the improvement of power system stability using an HVDC system.
	OEC1PSC302 (M. Tech)	Python Data Analytics	1. To understand the importance of data science 2. To experience and apply Python's diverse array of packages.
	OEC2PSC302 (M. Tech)	Waste to energy	1. How waste can be used as fuel 2. Uses of Biomass.
	OEC3PSC302 (M. Tech)	Composite Materials	1. Have a deep understanding of composite materials 2. Understand about Manufacturing of polymer & metal matrix composites.
	OEC4PSC302 (M. Tech)	Cost Management of Engineerin	1. Understand about the process of strategic cost management 2. Decision making , role of project teams in projects, cost behaviour & profit planning.
	PCCPSC303L (M. Tech)	Python Lab	1. To understand the importance of data science 2. To experience and apply Python's diverse array of packages.
	PCCPSC304 (M. Tech)	Phase - I Dissertation	The Phase - I Dissertation work is carried out by an individual student. In this work, students shall choose a specific topic/area for the project. The selected areas shall encompass recent and emerging trends in technologies that prove beneficial for society in general and humanity in particular. Supervisors will be assigned to each student in the beginning of the 3rd semester of their course. Each student at the end of the course will submit a Project report and a working prototype or simulation regarding the project and the same will be evaluated for final award of the course. The Phase - I Dissertation can be a full-fledged project or a part of a Phase - II Dissertation.
	PCCPSC401 (M. Tech)	Phase - II Dissertation	In the Phase - II Dissertation, the students are required to extend the Phase - I Dissertation for the final submission of the course. The final work is to be carried out in the last semester of their respective fields of study. The supervisors will guide the students from the beginning of the Phase - I Dissertation in 3rd semester to its accomplishment as a final project in the 4th semester. The students will be asked to submit a project report. These reports will be evaluated in partial fulfilment for the award of the degree of masters of Technology in their branches of study.

5C	Departmental website link in support of New Courses introduced in the Programme since **2019**.	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/BTECH_EE_afc8b483-75da-4a3d-829a-a957375b75c8.pdf https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/MTECH_PSC_1_dd83f7a7-a494-4c40-b05c-49	
6A	Dates of syllabus revisions during the last five years. (2019-2023)	2020-2021 (B.Tech)	2021(M.Tech)
6B	Departmental website link in support of syllabus revisions.	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/BTECH_EE_afc8b483-75da-4a3d-829a-a957375b75c8.pdf https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/MTECH_PSC_1_dd83f7a7-a494-4c40-b05c-49696bca42c0.pdf	
7	Are Programme Outcomes (POs) clearly mentioned in the syllabus? **(Y/N)**		Y
8	Are the Course Outcomes (COs) mentioned for each course of the programme? **(Y/N)**		Y
9A	**Does POs & COs have relevance to local, regional & global developmental needs? (Y/N)**		Y

9B	List of courses addressing **Local Needs:**		
	Course Code	*Course Title*	*Brief Justification*
	PEC3EE604 (B. Tech)	Electrical Materials	1. Given a type of material, the students will be able to qualitatively describe the bonding scheme and its general physical properties, as well as possible applications in electrical engineering. 2. Students will be able to do comparative analysis of magnetic materials based upon their properties. 3. Students will be able to differentiate among various materials such as conductor and semiconductor based upon the internal composition.
	MEC 2.07 B	Workshop Practice B	To make te student able to: Select suitable technique for MECting a specific fabrication need. Acquire a minimum practical skill with respect to the different manufacturing methods and develop the confidence to design & fabricate small components for their project work and to participate in various national and international technical competitions. Have good practical exposure to different fabrication techniques. Create of simple components using different materials.
	OEC3PSC302 (M. Tech	Composite Materials	This subject includes understanding about Manufacturing of polymer & metal matrix composites.
9C	List of courses addressing **Regional Needs:**		
	Course Code	*Course Title*	*Brief Justification*
	ELE 2.02	Principles of Electrical Engineering	1. Understand and Analyse basic electrical and magnetic circuits. 2. Understand basic types of electrical machines and their operating principles. 3. Measurement principles and basic electrical measurement devices,.
	ELE 2.02 L	Principles of Electrical Engineering Lab	1. To understand various basic electrical engineering devices and concepts practically. 2. Understand basic types of electrical machines and their operating principles.
	PEC3EE603	Electrical Machine Design	1. To understand the construction and performance characteristics of electrical machines. 2. Understand the various factors which influence the design: electrical, magnetic and thermal loading of Transformer. 3. Understand the various factors which influence the design: electrical and magnetic loading of Induction motor and synchronous machine. 4. Understand the principles of electrical machine design and carry out a basic design of synchronous machines.
	PEC1EE704	Power Quality	1. Understand the different power quality issues to be addressed 2. Understand the recommended practices by various standard bodies on voltage & frequency, harmonics 3. Understand about compensation and compensators

	PEC3EE704	Power Plant Engineering	1. Understand the layout, construction and working of the components inside a thermal power plant. 2. Understand the layout, construction and working of the components Diesel, Gas and Combined cycle power plants. 3. Understand the layout, construction and working of the components inside nuclear power plants. 4. Understand the layout, construction and working of the components inside Renewable energy power plants.
	PCCPSC201 (M. Tech)	Power Quality	1. Understand the different power quality issues to be addressed 2. Understand the recommended practices by various standard bodies like IEEE,IEC, etc on voltage & frequency, harmonics 3. Understanding Compensators for power quality problems.
	PCCPSC202 (M. Tech)	Power System Dynamics	1. Study of system dynamics and its physical interpretation 2. Development of mathematical models for synchronous machine 3. Modeling of induction motor.
	PCCPSC203 (M. Tech)	Nonlinear Systems and Control	1. Study of system dynamics and its physical interpretation 2. Development of mathematical models for nonlinear phenomena 3. Control of nonlinear systems.
	PCCPSC101 (M. Tech)	Power System Analysis	It is a core electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PCCPSC102 (M. Tech)	Power System Operation, Control and Optimization	It is a core electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PCCPSC103 (M. Tech)	Dynamics Of Linear Systems	To understand the linear system and its functions and to understand the stability analysis of linear systems and implement the same in MATLAB.
	PCCPSC106L (M. Tech)	Advanced Power System Lab	It is a core electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PEC3PSC104 (M. Tech)	High Power Converters	It is an electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PEC4PSC104 (M. Tech)	Electrical Power Distribution System	It is an electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PEC1PSC204 (M. Tech)	Restructured Power Systems	It is an electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PEC3PSC204 (M. Tech)	Digital Protection of Power Systems	It is an electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PEC2PSC301 (M. Tech)	Power System Transients	It is an electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PEC3PSC301 (M. Tech)	FACTS	It is an electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
	PEC6PSC301 (M. Tech)	HVDC Systems	It is an electrical engineering coarse and will address various regional needs in electrical engineering and relevent fields.
9D	List of courses addressing **Global Needs:**		
	Course Code	*Course Title*	*Brief Justification*
	OECME506	Automation in manufacturing	The students will get a comprehensive picture based on automation of manufacturing operations . They will also get acquainted about the various unconventional manufacturing processes. This will help them in manufacturing and relevent fields globally.
	OEC2EE703	Fuzzy Logic and Neural Networks	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
	OEC1ME705	Automatic Control	Control systems are used to enhance production, efficiency and safety in many industries. The scope of the global building automation and control system (BACS) market is broad and encompasses various types of buildings and industries.
	OEC2ME705	Engineering Statistics	Statistics have long been of great importance to engineers, providing a powerful tool for understanding the data collected from experiments and other activities. Engineering relies heavily upon statistics in many ways, from using statistical models for problem-solving to helping make decisions
	OEC3EE605	Python Data Analytics	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
	PCCEE804L	Advanced Power System Simulation and Scripting Lab	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
	OEC1EE605	Microcontroller 8051 & interfacing	1. To develop background knowledge of Computers and its memory System. 2. To understand the architecture of 8051. 3. To write programs for 8051 microcontrollers. 4. To understand the design of Microcontroller Applications.
	PEC5PSC104 (M. Tech)	Mathematical and Computational Methods for Power Engineering	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
	PEC2PSC204 (M. Tech)	Advanced Signal Processing	The students will be able to use advanced mathematical and statistical methods in the analysis and construction of signal processing systems as well as the ability to use programming tools to achieve the same.
	PEC4PSC204 (M. Tech)	SCADA System and Applications	SCADA is used to assist in automating and managing industrial processes that have become too complex or cumbersome for human monitoring and control. SCADA is particularly useful for processes that can be monitored and controlled remotely, especially in cases where it is possible to reduce
	PEC1PSC301 (M. Tech)	Artificial Intelligence	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
	PEC4PSC301 (M. Tech)	Industrial Load Modelling	Load modeling and identification is an important aspect in area of stability analysis, planning, monitoring, control and protection of power system.
	PEC5PSC301 (M. Tech)	Optimal Control	Optimal control and its ramifications have found applications in many different fields, including aerospace, process control, robotics, bioengineering, economics, finance, and management science, and it continues to be an active research area within control theory.
	PCCPSC303L (M. Tech)	Python Lab	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
	OEC1PSC302 (M. Tech)	Python Data Analytics	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
10A	**Does the Programme offer focus on Employability/ Entrepreneurship/ Skill development courses? (Y/N)**		Y
	List of **Employability Courses**:		
	Course Code	*Course Title*	*Brief Justification*
	ELE 2.02	Principles of Electrical Engineering	It is a core electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	ELE 2.02 L	Principles of Electrical Engineering Lab	It is a core electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC3EE603	Electrical Machine Design	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC1EE704	Power Quality	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC3EE704	Power Plant Engineering	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	OEC1EE605	Microcontroller 8051 & interfacing	It is a skill oriented course and will clearly help in employability.
	OECME506	Automation in manufacturing	It is a technical subject and will definitely aid in employability.
	OEC2EE703	Fuzzy Logic and Neural Networks	It is a technical subject and will definitely aid in employability.
	OEC1ME705	Automatic Control	It is a technical subject and will definitely aid in employability.
	OEC3EE605	Python Data Analytics	It is a skill oriented course and will clearly help in employability.
	PCCEE804L	Advanced Power System Simulation and Scripting Lab	It is a skill oriented course and will clearly help in employability.
	PEC2EE705	Design of Photovoltaic Systems	Knowing the design aspect of solar technology will aid in employability.
	PEC2EE802	Electric Vehicles	EVs are in full bloom these days and their knowledge will help in employability.
	PEC3EE802	Smart Grid	Smart technologies will aid in employability.
	OEC2EE605	Energy Audit and Management	This subject deals with the strategy of adjusting and optimizing energy, using systems and procedures so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems. This course will help the students in
	OEC3EE703	Energy Management in Buildings	Not only can energy management help reduce the carbon emissions that contribute to global warming, it also helps reduce our dependence on increasingly limited fossil fuels.
	PCCPSC101 (M. Tech)	Power System Analysis	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.

10B	PCCPSC102 (M. Tech)	Power System Operation, Control and Optimization	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PCCPSC106L (M. Tech)	Advanced Power System Lab	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC4PSC104 (M. Tech)	Electrical Power Distribution System	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC1PSC204 (M. Tech)	Restructured Power Systems	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PCCPSC103 (M. Tech)	Dynamics Of Linear Systems	It is an technical subject and will aid in employability.
	PCCPSC201 (M. Tech)	Power Quality	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PCCPSC202 (M. Tech)	Power System Dynamics	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PCCPSC203 (M. Tech)	Nonlinear Systems and Control	It is an technical subject and will aid in employability.
	PEC3PSC104 (M. Tech)	High Power Converters	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC2PSC301 (M. Tech)	Power System Transients	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC3PSC301 (M. Tech)	FACTS	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC6PSC301 (M. Tech)	HVDC Systems	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC3PSC204 (M. Tech)	Digital Protection of Power Systems	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC5PSC104 (M.Tech)	Mathematical and Computational Methods for Power Engineering	It is an electrical engineering subject and will aid in employability in Electric engineering and relevent fields.
	PEC2PSC204 (M. Tech)	Advanced Signal Processing	It is a technical subject and will definitely aid in employability.
	PEC4PSC204 (M. Tech)	SCADA System and Applications	It is a technical subject and will definitely aid in employability.
	PEC1PSC301 (M. Tech)	Artificial Intelligence	It is a skill oriented course and will clearly help in employability.
	PEC4PSC301 (M. Tech)	Industrial Load Modelling	It is a technical subject and will definitely aid in employability.
	PEC5PSC301 (M. Tech)	Optimal Control	It is a technical subject and will definitely aid in employability.
	PCCPSC303L (M. Tech)	Python Lab	It is a skill oriented course and will clearly help in employability.
	OEC1PSC302 (M. Tech)	Python Data Analytics	It is a skill oriented course and will clearly help in employability.
	PEC2PSC104 (M.Tech)	Smart Grid	Smart technologies will aid in employability.
	PEC5PSC204 (M.Tech)	Electric and Hybrid Vehicles	EVs and hybrid vehicles are in full bloom these days and their knowledge will help in employability.
	PEC1PSC104 (M.Tech)	Renewable Energy Systems	The environmental problems directly related to energy production by conventional means are reduced in renewable energy systems. This course will help the students in employability in Energy sector.
	OEC2PSC302 (M.Tech)	Waste to energy	Waste to energy achieves a reduction of greenhouse gas emissions. This course will help the students in employability in Energy sector.
10C	List of **Entrepreneurship Development Courses**:		
	Course Code	*Course Title*	*Brief Justification*
	HSMCEE801	Organisation of Engineering Systems and Human Resources and Management	This course is for B.Tech students and helps them to build an entrepreneurial mindset.
	OEC4PSC302 (M.Tech)	Cost Management of Engineering Projects	Project costs are the total funds needed to monetarily cover and complete a business transaction or work project. This course helps the students to build an entrepreneurial mindset.
10D	List of **Skill development Courses**:		
	Course Code	*Course Title*	*Brief Justification*
	OEC3EE605	Python Data Analytics	Python developers often have technical skills related to computer programming and personal skills that help them communicate their ideas and work in collaborative settings. By developing these skills, a Python developer might increase their productivity and encounter opportunities for
	OEC2EE703	Fuzzy Logic and Neural Networks	Fuzzy logic is used in Natural language processing and various intensive applications in Artificial Intelligence. It is extensively used in modern control systems such as expert systems. Fuzzy Logic mimics how a person would make decisions, only much faster. Thus, you can use it with Neural
	PCCEE804L	Advanced Power System Simulation and Scripting Lab	Simulations let you develop key skills through trial and error in a safe, controlled setting before you move on to practice in real life.
	OEC1EE605	Microcontroller 8051 & interfacing	Microcontroller programming is a critical skill in the world of embedded systems development. By understanding popular platforms, programming languages, tools, and techniques, developers can create efficient and responsive applications for various industries.
	PCCPSC303L (M.Tech)	Python Lab	Python developers often have technical skills related to computer programming and personal skills that help them communicate their ideas and work in collaborative settings. By developing these skills, a Python developer might increase their productivity and encounter opportunities for
	OEC1PSC302 (M.Tech)	Python Data Analytics	Python developers often have technical skills related to computer programming and personal skills that help them communicate their ideas and work in collaborative settings. By developing these skills, a Python developer might increase their productivity and encounter opportunities for
	PEC1PSC301 (M. Tech)	Artificial Intelligence	It is a skill baseed course and will offer practical, real-world relevance, preparing students for diverse challenges. These courses also foster personal development through critical thinking and teamwork.
11A	**Does the programme have courses addressing Professional ethics/ gender/ human values/ environment/ sustainability & other value framework enshrined in NEP2020/etc. (Y/N)**		Y
11B	List of courses addressing **Professional Ethics**:		
	Course Code	*Course Title*	*Brief Justification*
	HSMCEE801	Organisation of Engineering Systems and Human Resources and Management	Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public health, safety, and welfare.
11C	List of courses addressing **Gender Issues**:		
	Course Code	*Course Title*	*Brief Justification*
11D	List of courses addressing **Human Value Issues**:		
	Course Code	*Course Title*	*Brief Justification*
	HSMCEE801	Organisation of Engineering Systems and Human Resources and Management	Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public health, safety, and welfare.
	List of courses addressing **Environment Issues**:		
	Course Code	*Course Title*	*Brief Justification*
	CHM2.04	Environmental Science	1. Students will be able to understand the composition of Environment. 2. Understand atmosphere and hydrosphere. 3. Effects and remedies to air and water pollution. 4. Sustainable development & methods of Energy Management.
	OEC2EE605	Energy Audit and Management	This subject deals with the strategy of adjusting and optimizing energy, using systems and procedures so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems.

11E	OEC3EE703	Energy Management in Buildings	Not only can energy management help reduce the carbon emissions that contribute to global warming, it also helps reduce our dependence on increasingly limited fossil fuels.
	PEC2EE705	Design of Photovoltaic Syster	Shifting from conventional to renewable sources of energy in the form of solar energy can contribute in a positive way to the environment.
	PEC1PSC104 (M.Tech)	Renewable Energy Systems	The environmental problems directly related to energy production by conventional means are reduced in renewable energy systems.
	PCCPSC205L (M. Tech)	Power Quality and Renewable Energy Lab	To implement various concepts of power quality and renewable energy practically.
	OEC2PSC302 (M.Tech)	Waste to energy	Waste to energy achieves a reduction of greenhouse gas emissions.

11F	List of courses addressing **Sustainability issues**:		
	Course Code	*Course Title*	*Brief Justification*
	CHM2.04	Environmental Science	1. Students will be able to understand the composition of Environment. 2. Understand atmosphere and hydrosphere. 3. Effects and remedies to air and water pollution. 4. Sustainable development & methods of Energy Management.
	OEC3EE703	Energy Management in Buildings	Effective energy management in buildings can help to reduce energy consumption and lower the carbon footprint of buildings, which in turn helps to reduce energy costs and improve the overall sustainability of the built environment.
	PEC2EE705	Design of Photovoltaic Syster	1. Understand the basics of Solar PV System 2. Understand the working principles of standalone and grid connected PV systems.
	PEC2EE802	Electric Vehicles	The extraction and manufacturing processes of producing EV batteries negatively affect the environment, such as pollution, habitat destruction, and carbon emissions. Driving an electric vehicle can help in reduction of carbon footprint because there will be zero tailpipe emissions.
	PEC3EE802	Smart Grid	The integration of smart grid technologies, sustainable energy resources and low- carbon emissions in power system is an important route to sustainable development.
	PEC2PSC104 (M.Tech)	Smart Grid	The integration of smart grid technologies, sustainable energy resources and low- carbon emissions in power system is an important route to sustainable development.
	PEC5PSC204 (M.Tech)	Electric and Hybrid Vehicles	The extraction and manufacturing processes of producing EV batteries negatively affect the environment, such as pollution, habitat destruction, and carbon emissions. Driving an electric vehicle can help in reduction of carbon footprint because there will be zero tailpipe emissions.

11G	List of courses addressing **Other Value Framework** enshrined **in NEP2020/etc.**:		
	Course Code	*Course Title*	*Brief Justification*
	PCCPSC105 (M.Tech)	Research Methodolgy and IPR	NEP-2020 aims at creating a conducive ecosystem to catalyse and energize research and innovation in HEIs. The special focus is on seeding and nurturing the culture of research and innovation at universities and colleges through funding support, guidelines/policies and establishing innovation and research centres.

12A	**Does the Department/Directorate/Institute/ Centre offer Diploma Programme?** (Y/N)	N

12B — Details of the **Diploma Programmes** offered by the institutions where the students of the institution have enrolled and successfully completed during the last five years (2019-2023)

Programme Code	*Name of Diploma Programme*	*Mode of Programme (Online/Offline)*	*Year of Offering/enrolment*	*Contact hours of course*	*Number of students enrolled in the year*	*Number of Students completing the course in the year*	*Departmental website link to the relevant document*	*Number of students enrolled in the year*

13A	**Does the Department/Directorate/Institute/ Centre offer Certificate Courses? (Y/N)**	N

13B — Details of the **Certificate Courses** offered by the institutions where the students of the institution have enrolled and successfully completed during the last five years (2019-2023)

Course Code	*Name of Certificate Course*	*Mode of Course (Online/Offline)*	*Year of Offering/enrolment*	*Contact hours of course*	*Number of students enrolled in the year*	*Number of Students completing the course in the year*	*Departmental website link to the relevant document*	*Number of students enrolled in the year*

14A	**Does the Department/Directorate/Institute/ Centre offer Value-Added Courses? (Y/N)**	N

14B — Details of the **Value Added Courses** offered by the institutions where the students of the institution have enrolled and successfully completed during the last five years (2019-2023)

Course Code	*Name of Value-Added Course*	*Mode of Course (Online/Offline)*	*Year of Offering/enrolment*	*Contact hours of course*	*Number of students enrolled in the year*	*Number of Students completing the course in the year*	*Departmental website link to the relevant document*	*Number of students enrolled in the year*

15A	**Does the Department/Directorate/Institute/ Centre offer Online Courses of MOOCs, SWAYAM/e-PG Pathshala/ NPTEL and other recognized platforms? (Y/N)**	N

15B — Details of **Online Courses of MOOCs, SWAYAM/e-PG Pathshala/ NPTEL and other recognized platforms** where the students of the institution have enrolled and successfully completed during the last five years (2019-2023)

Course Code	*Name of the Course*	*Mode of the Course- offered by the HEI or Online (Specify the platform like MOOCS, SWAYAM, etc.)*	*Year of Offering/enrolment*	*Contact hours of course*	*Number of students enrolled in the year*	*Number of Students completing the course in the year*	*Departmental website link to the relevant document*	*Number of students enrolled in the year*

16A	**Does the programme have Field Projects/ Research Projects /Internship in the programme? (Y/N)**	Y

Details of components of **Field Projects / Research Projects / Internships implemented** during last five years **(2019-2023)**

Course Code	*Name of the course pertaining to field projects/ Research Projects /Internship*	*Number of Credits*	*Number of students undertaking course*	*Departmental website link to the relevant document*

16B	ELE7517	Industrial Training & Viva	2	129	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/null_7_a68047f0-d5e4-4f72-8a53-0ee114ea8f67.pdf
	ELE7617	Pre Project	3	129	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/null_7_a68047f0-d5e4-4f72-8a53-0ee114ea8f67.pdf
	ELE8417	Major Project	10	129	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/null_7_a68047f0-d5e4-4f72-8a53-0ee114ea8f67.pdf
	ELE7417B	Industrial Training & Viva	1	160	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/Syllabus_Full_ELE_981ae63d-e26c-450e-be35-17e0caaa0777.pdf
	ELE7517B	Pre Project	5	160	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/Syllabus_Full_ELE_981ae63d-e26c-450e-be35-17e0caaa0777.pdf
	ELE8417B	Major Project	13	160	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/Syllabus_Full_ELE_981ae63d-e26c-450e-be35-17e0caaa0777.pdf
	PCCPSC304	Phase - I Dissertation	8	10	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/MTECH_PSC_1_dd83f7a7-a494-4c40-b05c-49696bca42c0.pdf
	PCCPSC401	Phase - II Dissertation	16	10	https://iotee.uok.edu.in/Files/2418353a-a25f-407d-b01f-f21810ba823d/Menu/MTECH_PSC_1_dd83f7a7-a494-4c40-b05c-49696bca42c0.pdf
17	**Any other Relevant Information:**				

Sd/-
Mr. M. Aarish Shaheen

Signature of the Head/Director of the Department/Centre/Institute

General Instructions:

1. ***Kindly format the syllabus in light of the instruction and discussions held in past meetings and upload the syllabus on the Departmental Website.***
2. ***Upload valid proofs on the Departmental Website.***