Self-Study Report (SSR) - Criterion-1

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

1	Department/Directorate/Centre/Institute:		Mechanical Engineering Department, Institute of Technology, University of Kashmir, Zakura Campus
2	Name of the Programme Offered:		1. B. Tech (Mechanical Engineering) 2. M.Tech (Design Engineering)
3	Departmental website link of the complete/updated		https://iotme.uok.edu.in/Main/Default.aspx#?active=lnk2
4	Number of Courses in the Programme?		1. B. Tech (Mechanical Engineering): **70(B.Tech)** 2. M.Tech (Design Engineering): **30 (M.Tech)**
5A	Number of New Courses introduced in the Programme since 2019?		1. B. Tech (Mechanical Engineering): **31(B.Tech)** 2. M.Tech (Design Engineering): **30 (M.Tech)**
5B	List of New Courses introduced since 2019:		
	Course Code	*Course Title*	Brief Description
	CIV20106	Engineering Drawing	Students will be Introduced to engineering design and its place in society. Students will be exposed to the visual aspects of engineering design. Students will be exposed to engineering graphics standards. Students will be exposed
	CiIV20107A	Workshop Practice A	To make the student able to: Select suitable technique for MECting a specific job . Acquire a minimum practical skill with respect to the different manufacturing methods and develop the confidence to develop small components for their project work and to participate in various national and international technical competitions. . Have good practical exposure to different techniques. 4. Create of simple components using different materials.
	MEC20205	Computer Aided Drawing	To acquire the knowledge of CAD software and its features. preparation of assembly drawings using CAD packages
	MEC20206	Engineering Mechanics	Provide an introductory treatment of Engineering Mechanics to all the students of engineering, with a view to prepare a good foundation for taking up advanced courses in the area in the subsequent semesters. Providing a working knowledge of statics with emphasis on force equilibrium and free body diagrams. Provide an understanding of the kinds of stress and deformation and how to determine them in a wide range of simple, practical structural problems, and an understanding of the mechanical behaviour of materials under various load conditions.
	MEC20207B	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.
	ESC ME301 (B.Tech)	Fundamentals of Dynamics	To provide an introductory treatment of Engineering Mechanics (Dynamics) to all the students of Engineering, with a view to prepare a good foundation for taking up advanced courses in the area in the subsequent semesters.
	PCC_ME302 (B.Tech)	Computer Aided Machine Drawing	To create drawing in either 2D/3D in order to visualize the construction of machine parts, and to assemble and disassemble various machine components for clear Visualization.
	PCC_ME303L (B.Tech)	Materials Engineering Lab	To provide basic knowledge of science behind materials & physical metallurgy. Introduce the concept of structure property relaons and to give students a feel of how material science is useful in engineering pracces.
	BSC_ME401 (B.Tech)	Laplace, Fourier and Z - Transforms	To understand various Transformation techniques and their use to solve boundary value problems and various linear differential equations
	PCC_ME402 (B.Tech)	Solid Mechanics-I	To understand the nature of stresses developed in simple geometries such as bars, cantilever, beams, shafts, cylinders and spheres for various types of simple loads. To calculate the elastic deformation occurring in various simple geometrical for different types of loading.
	PCC_ME402L (B.Tech)	Solid Mechanics-I Lab	To understand the measurement of mechanical properes of materials . To understand the deformaon behaviour of materials . To understand the kinemac and dynamic characteriscs of mechanical devices
	PCC_MEC504 (B.Tech)	Theory of Machines -II	To learn how to treat the vibration phenomena by transforming the physical model into a mathematical model and solve it by using the appropriate mathematical operations.
	PCC_ME504L (B.Tech)	Theory of Machines-II-Lab	To impart practical knowledge on design and analysis of mechanisms for the specified type of motion in a machine.
	OEC_ME506 (B.Tech)	Automation in Manufacturing	Students will get a comprehensive picture based automation of manufacturing operations.
	OEC_ME506L (B.Tech)	Automation in Manufacturing Lab	The students will get a comprehensive picture of computer based automaon of manufacturing operaons
	HSM_ME602 (B.Tech)	Operations Research	To impart knowledge in concepts and tools of operations research and to understand mathematical models for analyzing different situations in the Industrial/business scenario involving limited resources and finding the optimal solution within constraints.
	PEC2-ME603 (B.Tech)	Automobile Engineering	To study basics of principles, importance and features of actual automobile Systems such as axle, differential, brakes, Steering, suspension and balancing etc.
	PEC2-ME603L (B.Tech)	Automobile Engineering Lab	To study basics of principles, importance and features of actual automobile systems such as axle, differenal, brakes, Steering, suspension, and balancing etc.
	PCC_ME604 (B.Tech)	Design of Machine Elements-I	This course seeks to provide an introduction to the design of machine elements commonly encountered in Mechanical engineering practice through strong background in mechanics of materials based failure criteria underpinning the safety-critical design of machine components.
	PCC_ME605 (B.Tech)	Compressible Flow and Machines	This course seeks to provide an introduction to compressible flows, and understand some important features of different categories of compressible flows of ideal gas, isentropic and non isentropic flows including flows across normal shock waves and it's application to gas turbines jet and rocket propulsion, fans and compressors.
	PCC_ME605L (B.Tech)	Compressible Flow and Machines Lab	This course seeks to provide an introduction to compressible flows, and understand some important features of different categories of compressible flows of ideal gas, isentropic and non isentropic flows including flows across normal shock waves and it's application to gas turbines jet and rocket propulsion, fans and compressors.
	PCC_ME703 (B.Tech)	Heating Ventilation and Air Conditioning	To apply the principles of Thermodynamics to analyse different types of refrigeration and Air Conditioning Systems and to understand the functionality of the major components.

	PCC_ME703L (B.Tech)	Heating Ventilation and Air Conditioning Lab	To have a good understanding of the working principles of refrigeraon and air-condioning systems.
	OEC2_ME705 (B.Tech)	Introduction to Project Management	To understand the general and advanced concepts for Project Management for managing projects under costs and time constraints.
	PEC1_ME801 (B.Tech)	Fundamentals of Tribology	To provide the knowledge and importance of Tribology in design, friction, wear and lubrication aspects of machine components. To understand the field of Tribology and it's historical development and also learn the surface phenomenon related to relative motion and the nature of friction. To understand the role of tribology in industry and also reveal the basic understanding of friction. To introduce the concept of lubricants, compare boundary lubrication, mixed lubrication lubrication, hydrostatic lubrication.
	PEC1_ME801L (B.Tech)	Fundaments of Tribology Lab	To impart hands-on praccal exposure on tribological tests and equipment. To study and pracce the various tribological tests that can be performed on pin-on-disk tribometer and equip students with the praccal knowledge required in the tribological field.
	PEC2_ME801 (B.Tech)	Composite Materials	To train students to be able to design composite structures, select composite Materials, conduct stress analyses of selected practical applications using laminated plate theories and appropriate strength criteria, and be familiar with the properties and response of composite structures subjected to static and cyclic loading.
	PEC2_ME801L (B.Tech)	Composite Materials Lab	To train students to be able to design composite structures, select composite Materials, conduct stress analyses of selected practical applications using laminated plate theories and appropriate strength criteria, and be familiar with the properties and response of composite structures subjected to static and cyclic loading.
	OEC2_ME802 (B.Tech)	Total Quality Management	Provide the knowledge required to assess and improve product quality through process control procedures and quality improvement techniques.
	OEC1_ME803 (B.Tech)	Numerical Methods for Engineering	To provide the student with different numerical techniques in order to find approximate numerical solutions to the numerical problems where exact solutions are not available. To develop the concepts of making and solving mathematical models of different engineering problems. To develop the concepts of writing computer programs for solving engineering problems.
	OEC2_ME803 (B.Tech)	Mechatronic Systems	To impart knowledge about the elements and techniques involved in Mechatronics Systems which are very much essential to understand the emerging field of automation
	PEC2_ME701 (B.Tech)	Energy Systems and Management	To study the various energy Systems and the status for energy sources and technologies, their environment interaction and the relevant global energy policies
	PCC_DE101 (M.Tech)	Finite Element Methods	To learn and apply finite element solutions to structural, thermal, dynamic problem to develop the knowledge and skills needed to effectively evaluate finite element analyses.
	PCC_DE102 (M.Tech)	Computational Fluid Dynamics	To develop skills in computational fluid dynamics to address engineering problems. To understand the basic structure and capabilities of current commercial CFD codes
	HSM_DE103 (M.Tech)	Design Thinking	Investigate and think creatively about design problems and opportunities. initiate an attitude of playfulness to aid design thinking. develop visual literacy and articulacy to explain design decisions.
	PEC1A_DE104 (M.Tech)	Continuum Mechanics	This course is designed for students of Solid Mechanics and Fluid Mechanics. Its purpose is to equip students with a rigorous foundation-level understanding to support their efforts in the theory, modeling and analysis of problems arising in the Engineering Sciences
	PEC2B_DE104 (M.Tech)	Tribology in Design	It gives the students an interdisciplinary understanding of the tribological behavior, design, and maintenance of different machine elements such as journal and rolling element bearings, cams-followers, gears, hard disk drives,
	PEC3C_DE104 (M.Tech)	Advanced Manufacturing Technology	To make acquainted the various unconventional manufacturing processes.To know about the applications of advanced manufacturing processes (which are exceptional). To encourage the students for developing the models of Advanced Manufacturing Processes
	PEC1B_DE105 (M.Tech)	Principle of Solar Engineering	The major objectives of this course to educate students about Solar Energy Engineering and their applications.
	PEC2B_DE105 (M.Tech)	Cryogenics	To provide the knowledge of evolution of low temperature science. To provide knowledge on the properties of materials at low temperature.To familiarize with various gas liquefaction and refrigeration systems and to provide design aspects of cryogenic storage and transfer lines
	PCC_DE201 (M.Tech)	Introduction to Theory of Plates and Shells	To achieve fundamental understanding of the classical and refined theories of elastic plates and shells, address limitations and challenges, and present analytical and numerical solution techniques.
	PCC_DE202 (M.Tech)	Conduction and Radiation	Discussion and use of methods for the analytical solution of heat conduction and heat radiation problems including Bessel's functions, separation of variables, superposition, and the Laplace transform. Numerical solution of combined heat conduction and radiation problems using the methods of finite difference and discrete ordinates for radiatively participating and non-participating media.
	HSM_DE203 (M.Tech)	Project Management	Students will discover the project life cycle and learn how to build a successful project from pre-implementation to completion. It will introduce project management topics such as resources, costs, time constraints and project
	PEC1C_DE204 (M.Tech)	Computer Aided Engineering Design	To impart fundamental knowledge to students in the latest technological topics on Computer Aided Design, Computer Aided Manufacturing and Computer Aided Engineering Analysis and to prepare them for taking up further research in the areas.To broaden and deepen their capabilities in analytical and experimental research methods, analysis of data, and drawing relevant conclusions for scholarly writing and presentation.
	PEC2C_DE204 (M.Tech)	Fracture Mechanics	Fracture Mechanics course provides understanding of the mechanisms of fractures on brittle and ductile materials and their relation to the stress / strain distribution around the defective part of the static load, and provides understanding and understanding of the propagation process cracks due to dynamic loads, and can apply the concept of fault mechanics in the planning and analysis of construction failures.
	PEC3C_DE204 (M.Tech)	Convective Heat Transfer	The course begins by reviewing the equations of motion of viscous fluids. Energy equation that governs the heat transfer across a fluid layer is introduced. Discussion of exact and approximate solutions of convection is an integral part of the course. Laminar and turbulent flow regimes will be covered with discussions of turbulent transport and modeling.
	OEC1_DE205 (M. Tech)	Computational Methods in Engineering	To familiarize different numerical methods to solve engineering problems. To write computer programs and use tool boxes in the software packages. To select a specific numerical method to solve practical problems.
	OEC2_DE205 (M. Tech)	Cost Management of Engineering Projects	To attain knowledge in Cost Management process and Costing System. Ability to understand the basic concepts of Project planning, execution, and cost control.Discuss about Various types of costs and its behaviour along with Quality Management. Identify various types of Budgets involved in Cost Management process . Broaden the career potential of available techniques and problems available in Cost Management.
	OEC3_DE205 (M. Tech)	Artificial intelligence and Machine Learning	Students will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Artificial Intelligence and Machine Learning. Students will be ethically and socially responsible solution providers and entrepreneurs in the field of Engineering with AI/ML Specialization.
	OEC4_DE205 (M. Tech)	Swaym (Moocs)	While talking about the course topic, Swayam courses are available in four quadrants, they are video lecture, reading material(can be downloaded & printed), self-assessment (done via tests/quizzes) and an online discussion forum is present where students can get their doubts cleared.

	PEC1D_DE301 (M.Tech)	Mechanics of Composite Materials	This course provides students a background in modern composite materials which are being used in an ever-increasing range of applications and industries. Basic knowledge of composite materials will allow engineers to understand the issues associated with using these materials, as well as gain insight into how their usage differs from conventional materials such as metals, and ultimately be able to use composites to their fullest potential. Topics covered include: current and potential applications of composite materials, fibers, matrices, manufacturing methods for composites, anisotropic elasticity, micromechanics for determining mechanical properties of composite materials, classical laminated plate theory, failure and strength analysis of composite materials, and other advanced
	PEC2D_DE301 (M.Tech)	Dynamics of Compressible Flow	To develop skills in computational fluid dynamics to address engineering problems. To understand the basic structure and capabilities of current commercial CFD codes.
	PEC3D_DE301 (M.Tech)	Mechanical Vibrations of Continuous Systems	This course provides students a background in modern composite materials which are being used in an ever-increasing range of applications and industries. Basic knowledge of composite materials will allow engineers to understand the issues associated with using these materials, as well as gain insight into how their usage differs from conventional materials such as metals, and ultimately be able to use composites to their fullest potential. Topics covered include: current and potential applications of composite materials, fibers, matrices, manufacturing methods for composites, anisotropic elasticity, micromechanics for determining mechanical properties of composite materials, classical laminated plate theory, failure and strength analysis of composite materials, and other advanced
	DSV_DE302 (M.Tech)	Seminar	In this course, students in consultation with specific faculty member will carry out literature survey in specific research area of interest and periodically present his/her observations in the form of seminar presentation. Finally, the student will submit a report on his/her observation. Based on the literature review conducted, students will choose their project and thesis works to be carried out.
	DSV_DE303 (M.Tech)	Professional Viva	To acquire knowledge and skills to face the interview panel. To Equip the students with analytical and evaluation abilities to to respond to impromptu questions by the panel members. To make the students to face the expert panel and present the knowledge, skills and problems in the most effient way.
	AU_DE304 (M.Tech)	Experimental Methods/ Research Mathdology	This course addresses the issues inherent in selecting a research problem and discuss the techniques and tools to be employed in completing a research project. This will also enable the students to prepare report writing and framing Research proposals.
	DSV_DE305 (M.Tech)	Dissertation Phase-I	To investigate the chosen topic in depth. This implies collecting and reviewing literature (e.g. books, papers, journals, websites, proceedings etc.) and understanding and interpreting the most up-to-date concepts and theories of your chosen academic field and/or thesis topic.
	DSV_DE401 (M.Tech)	Dissertation Phase-II	The Dissertation Work is by far the most important single piece of research work in the post-graduate programme. It provides the opportunity for student to demonstrate independence and originality, to plan and organize a large Dissertation over a long period and to put into practice some of the techniques student have been taught throughout the course. The students are advised to choose a Dissertation that involves a combination of sound background research, a solid implementation, or piece of theoretical work, and a thorough evaluation of the Dissertation's output in both absolute and relative terms. Interdisciplinary Dissertation proposals and innovative Dissertations are encouraged and more appreciable.

5C	Departmental website link in support of New Courses introduced in the Programme since **2019**.	https://iotme.uok.edu.in/Files/1b8d3dec-0004-4fcc-9e2e-36eb12507392/Menu/SYLLABUS_first_year_CIV_ELE_MEE-1_0eae0421-9322-474e-ae91-00453dd2be66_ad46ccf2-64a0-46de-b918-536b688fbbb7.pdf https://drive.google.com/file/d/1IyyihUwLKZQjMGmpqmMGK315i1yQt_kj/view?usp=sharing
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://iotme.uok.edu.in/Files/1b8d3dec-0004-4fcc-9e2e-36eb12507392/Menu/SYLLABUS_first_year_CIV_ELE_MEE-1_0eae0421-9322-474e-ae91-00453dd2be66_ad46ccf2-64a0-46de-b918-536b688fbbb7.pdf https://drive.google.com/file/d/1IyyihUwLKZQjMGmpqmMGK315i1yQt_kj/view?usp=sharing
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*
CIV20106	Engineering Drawing	Students will be Introduced to engineering design and its place in society. Students will be exposed to the visual aspects of engineering design. Students will be exposed to engineering graphics standards. Students will be exposed to solid modelling. Students will be able to create working drawings.
CiIV20107A	Workshop Practice A	To make the student able to: Select suitable technique for MECting a specific job . Acquire a minimum practical skill with respect to the different manufacturing methods and develop the confidence to develop small components for their project work and to participate in various national and international technical competitions. . Have good practical exposure to different techniques. 4. Create of simple components using different materials.
MEC20205	Computer Aided Drawing	To acquire the knowledge of CAD software and its features. preparation of assembly drawings using CAD packages
MEC20207B	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.
OEC_ME506 (B.Tech)	Automation in Manufacturing	Students will get a comprehensive picture based automation of manufacturing operations.
OEC_ME506L (B.Tech)	Automation in Manufacturing Lab	The students will get a comprehensive picture of computer based automaon of manufacturing operaons
PEC2-ME603 (B.Tech)	Automobile Engineering	To study basics of principles, importance and features of actual automobile Systems such as axle, differential, brakes, Steering, suspension and balancing etc.
PEC2-ME603L (B.Tech)	Automobile Engineering Lab	To study basics of principles, importance and features of actual automobile systems such as axle, differenal, brakes, Steering, suspension, and balancing etc.
PCC_ME703 (B.Tech)	Heating Ventilation and Air Conditioning	To apply the principles of Thermodynamics to analyse different types of refrigeration and Air Conditioning Systems and to understand the functionality of the major components.

	PCC_ME703L (B.Tech)	Heating Ventilation and Air Conditioning Lab	To have a good understanding of the working principles of refrigeraon and air-condioning systems.
	PEC3C_DE104 (M.Tech)	Advanced Manufacturing Technology	To make acquainted the various unconventional manufacturing processes.To know about the applications of advanced manufacturing processes (which are exceptional). To encourage the students for developing the models of Advanced Manufacturing Processes
	PEC1B_DE105 (M.Tech)	Principle of Solar Engineering	The major objectives of this course to educate students about Solar Energy Engineering and their applications.
	PEC1C_DE204 (M.Tech)	Computer Aided Engineering Design	To impart fundamental knowledge to students in the latest technological topics on Computer Aided Design, Computer Aided Manufacturing and Computer Aided Engineering Analysis and to prepare them for taking up further research in the areas.To broaden and deepen their capabilities in analytical and experimental research methods, analysis of data, and drawing relevant conclusions for scholarly writing and presentation.

9C	List of courses addressing **Regional Needs:**		
	Course Code	*Course Title*	*Brief Justification*
	OEC_ME506 (B.Tech)	Automation in Manufacturing	Students will get a comprehensive picture based automation of manufacturing operations.
	OEC_ME506L (B.Tech)	Automation in Manufacturing Lab	The students will get a comprehensive picture of computer based automaon of manufacturing operaons
	PEC2-ME603 (B.Tech)	Automobile Engineering	To study basics of principles, importance and features of actual automobile Systems such as axle, differential, brakes, Steering, suspension and balancing etc.
	PEC2-ME603L (B.Tech)	Automobile Engineering Lab	To study basics of principles, importance and features of actual automobile systems such as axle, differenal, brakes, Steering, suspension, and balancing etc.
	PCC_ME703 (B.Tech)	Heating Ventilation and Air Conditioning	To apply the principles of Thermodynamics to analyse different types of refrigeration and Air Conditioning Systems and to understand the functionality of the major components.
	PCC_ME703L (B.Tech)	Heating Ventilation and Air Conditioning Lab	To have a good understanding of the working principles of refrigeraon and air-condioning systems.
	PEC3C_DE104 (M.Tech)	Advanced Manufacturing Technology	To make acquainted the various unconventional manufacturing processes.To know about the applications of advanced manufacturing processes (which are exceptional). To encourage the students for developing the models of Advanced Manufacturing Processes
	PEC1B_DE105 (M.Tech)	Principle of Solar Engineering	The major objectives of this course to educate students about Solar Energy Engineering and their applications.
	PEC1C_DE204 (M.Tech)	Computer Aided Engineering Design	To impart fundamental knowledge to students in the latest technological topics on Computer Aided Design, Computer Aided Manufacturing and Computer Aided Engineering Analysis and to prepare them for taking up further research in the areas.To broaden and deepen their capabilities in analytical and experimental research methods, analysis of data, and drawing relevant conclusions for scholarly writing and presentation.

9D	List of courses addressing **Global Needs:**		
	Course Code	*Course Title*	*Brief Justification*
	MEC20205	Computer Aided Drawing	To acquire the knowledge of CAD software and its features. preparation of assembly drawings using CAD packages
	ESC ME301 (B.Tech)	Fundamentals of Dynamics	To provide an introductory treatment of Engineering Mechanics (Dynamics) to all the students of Engineering, with a view to prepare a good foundation for taking up advanced courses in the area in the subsequent semesters.
	PCC_ME302 (B.Tech)	Computer Aided Machine Drawing	To create drawing in either 2D/3D in order to visualize the construction of machine parts, and to assemble and disassemble various machine components for clear Visualization.
	PCC_ME303L (B.Tech)	Materials Engineering Lab	To provide basic knowledge of science behind materials & physical metallurgy. Introduce the concept of structure property relaons and to give students a feel of how material science is useful in engineering pracces.
	PCC_MEC504 (B.Tech)	Theory of Machines -II	To learn how to treat the vibration phenomena by transforming the physical model into a mathematical model and solve it by using the appropriate mathematical operations.
	PCC_ME504L (B.Tech)	Theory of Machines-II-Lab	To impart practical knowledge on design and analysis of mechanisms for the specified type of motion in a machine.
	OEC_ME506 (B.Tech)	Automation in Manufacturing	Students will get a comprehensive picture based automation of manufacturing operations.
	OEC_ME506L (B.Tech)	Automation in Manufacturing Lab	The students will get a comprehensive picture of computer based automaon of manufacturing operaons
	Fundamentals of Tribology	Fundamentals of Tribology	To provide the knowledge and importance of Tribology in design, friction, wear and lubrication aspects of machine components. To understand the field of Tribology and it's historical development and also learn the surface phenomenon related to relative motion and the nature of friction. To understand the role of tribology in industry and also reveal the basic understanding of friction. To introduce the concept of lubricants, compare boundary lubrication, mixed lubrication lubrication, hydrostatic lubrication.
	Fundaments of Tribology Lab	Fundaments of Tribology Lab	To impart hands-on praccal exposure on tribological tests and equipment. To study and pracce the various tribological tests that can be performed on pin-on-disk tribometer and equip students with the praccal knowledge required in the tribological field.
	Composite Materials	Composite Materials	To train students to be able to design composite structures, select composite Materials, conduct stress analyses of selected practical applications using laminated plate theories and appropriate strength criteria, and be familiar with the properties and response of composite structures subjected to static and cyclic loading.
	Composite Materials Lab	Composite Materials Lab	To train students to be able to design composite structures, select composite Materials, conduct stress analyses of selected practical applications using laminated plate theories and appropriate strength criteria, and be familiar with
	PCC_DE102 (M.Tech)	Computational Fluid Dynamics	To develop skills in computational fluid dynamics to address engineering problems. To understand the basic structure and capabilities of current commercial CFD codes.
	PEC2B_DE104 (M.Tech)	Tribology in Design	It gives the students an interdisciplinary understanding of the tribological behavior, design, and maintenance of different machine elements such as journal and rolling element bearings, cams-followers, gears, hard disk drives, seals, pumps, compressors, etc.
	PEC3C_DE104 (M.Tech)	Advanced Manufacturing Technology	To make acquainted the various unconventional manufacturing processes.To know about the applications of advanced manufacturing processes (which are exceptional). To encourage the students for developing the models of Advanced Manufacturing Processes
	PEC1B_DE105 (M.Tech)	Principle of Solar Engineering	The major objectives of this course to educate students about Solar Energy Engineering and their applications.

	PEC2B_DE105 (M.Tech)	Cryogenics	To provide the knowledge of evolution of low temperature science. To provide knowledge on the properties of materials at low temperature.To familiarize with various gas liquefaction and refrigeration systems and to provide
	PEC2D_DE301 (M.Tech)	Dynamics of Compressible Flow	To develop skills in computational fluid dynamics to address engineering problems. To understand the basic structure and capabilities of current commercial CFD codes.
	HSM_ME602 (B.Tech)	Operations Research	To impart knowledge in concepts and tools of operations research and to understand mathematical models for analyzing different situations in the Industrial/business scenario involving limited resources and finding the optimal solution within constraints.

10A	**Does the Programme offer focus on Employability/ Entrepreneurship/ Skill development courses? (Y/N)**	Y

10B List of **Employability Courses**:

Course Code	*Course Title*	*Brief Justification*
CiIV20107A	Workshop Practice A	To make the student able to: Select suitable technique for MECting a specific job . Acquire a minimum practical skill with respect to the different manufacturing methods and develop the confidence to develop small components for their project work and to participate in various national and international technical competitions. . Have good practical exposure to different techniques. 4. Create of simple components using different materials.
MEC20205	Computer Aided Drawing	To acquire the knowledge of CAD software and its features. preparation of assembly drawings using CAD packages
MEC20207B	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.
PCC_ME302 (B.Tech)	Computer Aided Machine Drawing	To create drawing in either 2D/3D in order to visualize the construction of machine parts, and to assemble and disassemble various machine components for clear Visualization.
OEC_ME506 (B.Tech)	Automation in Manufacturing	Students will get a comprehensive picture based automation of manufacturing operations.
OEC_ME506L (B.Tech)	Automation in Manufacturing Lab	The students will get a comprehensive picture of computer based automaon of manufacturing operaons
PEC2-ME603 (B.Tech)	Automobile Engineering	To study basics of principles, importance and features of actual automobile Systems such as axle, differential, brakes, Steering, suspension and balancing etc.
PEC2-ME603L (B.Tech)	Automobile Engineering Lab	To study basics of principles, importance and features of actual automobile systems such as axle, differenal, brakes, Steering, suspension, and balancing etc.
PCC_ME703 (B.Tech)	Heating Ventilation and Air Conditioning	To apply the principles of Thermodynamics to analyse different types of refrigeration and Air Conditioning Systems and to understand the functionality of the major components.
PCC_ME703L (B.Tech)	Heating Ventilation and Air Conditioning Lab	To have a good understanding of the working principles of refrigeraon and air-condioning systems.
OEC3_DE205 (M. Tech)	Artificial intelligence and Machine Learning	Students will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Artificial Intelligence and Machine Learning. Students will be ethically and socially responsible solution providers and entrepreneurs in the field of Engineering with AI/ML Specialization.

10C List of **Entrepreneurship Development Courses**:

Course Code	*Course Title*	*Brief Justification*
OEC2_ME802 (B.Tech)	Total Quality Management	Provide the knowledge required to assess and improve product quality through process control procedures and quality improvement techniques.
HSM_ME602 (B.Tech)	Operations Research	To impart knowledge in concepts and tools of operations research and to understand mathematical models for analyzing different situations in the Industrial/business scenario involving limited resources and finding the optimal solution within constraints.
MEC20207B	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
PCC_ME302 (B.Tech)	Computer Aided Machine Drawing	To create drawing in either 2D/3D in order to visualize the construction of machine parts, and to assemble and disassemble various machine components for clear Visualization.
OEC_ME506 (B.Tech)	Automation in Manufacturing	Students will get a comprehensive picture based automation of manufacturing operations.
OEC_ME506L (B.Tech)	Automation in Manufacturing Lab	The students will get a comprehensive picture of computer based automaon of manufacturing operaons
PEC2-ME603 (B.Tech)	Automobile Engineering	To study basics of principles, importance and features of actual automobile Systems such as axle, differential, brakes, Steering, suspension and balancing etc.
PEC2-ME603L (B.Tech)	Automobile Engineering Lab	To study basics of principles, importance and features of actual automobile systems such as axle, differenal, brakes, Steering, suspension, and balancing etc.
PCC_ME703 (B.Tech)	Heating Ventilation and Air Conditioning	To apply the principles of Thermodynamics to analyse different types of refrigeration and Air Conditioning Systems and to understand the functionality of the major components.
PCC_ME703L (B.Tech)	Heating Ventilation and Air Conditioning Lab	To have a good understanding of the working principles of refrigeraon and air-condioning systems.
OEC3_DE205 (M. Tech)	Artificial intelligence and Machine Learning	Students will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Artificial Intelligence and Machine Learning. Students will be ethically and socially responsible solution providers and entrepreneurs in the field of Engineering with AI/ML Specialization.

10D List of **Skill development Courses**:

Course Code	*Course Title*	*Brief Justification*
CIV20106	Engineering Drawing	Students will be Introduced to engineering design and its place in society. Students will be exposed to the visual aspects of engineering design. Students will be exposed to engineering graphics standards. Students will be exposed to solid modelling. Students will be able to create working drawings.

	CIV20107A	Workshop Practice A	To make the student able to: Select suitable technique for MECting a specific job . Acquire a minimum practical skill with respect to the different manufacturing methods and develop the confidence to develop small components for their project work and to participate in various national and international technical competitions. . Have good practical exposure to different techniques. 4. Create of simple components using different materials.
	MEC20205	Computer Aided Drawing	To acquire the knowledge of CAD software and its features. preparation of assembly drawings using CAD packages
	PCC_ME302 (B.Tech)	Computer Aided Machine Drawing	To create drawings in 2d/ 3d inorder to visualize the construction of machine parts and to assemble and disassemble various machine components ro clear visualization various CAD packages
	MEC20207B	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
	OEC_ME506 (B.Tech)	Automation in Manufacturing	Students will get a comprehensive picture based automation of manufacturing operations.
	OEC_ME506L (B.Tech)	Automation in Manufacturing Lab	The students will get a comprehensive picture of computer based automaon of manufacturing operaons
	PEC2-ME603 (B.Tech)	Automobile Engineering	To study basics of principles, importance and features of actual automobile Systems such as axle, differential, brakes, Steering, suspension and balancing etc.
	PEC2-ME603L (B.Tech)	Automobile Engineering Lab	To study basics of principles, importance and features of actual automobile systems such as axle, differenal, brakes, Steering, suspension, and balancing etc.
	PCC_ME703 (B.Tech)	Heating Ventilation and Air Conditioning	To apply the principles of Thermodynamics to analyse different types of refrigeration and Air Conditioning Systems and to understand the functionality of the major components.
	PCC_ME703L (B.Tech)	Heating Ventilation and Air Conditioning Lab	To have a good understanding of the working principles of refrigeraon and air-condioning systems.
	PEC3C_DE104 (M.Tech)	Advanced Manufacturing Technology	To make acquainted the various unconventional manufacturing processes.To know about the applications of advanced manufacturing processes (which are exceptional). To encourage the students for developing the models of Advanced Manufacturing Processes
	PEC1B_DE105 (M.Tech)	Principle of Solar Engineering	The major objectives of this course to educate students about Solar Energy Engineering and their applications.
	PEC1C_DE204 (M.Tech)	Computer Aided Engineering Design	To impart fundamental knowledge to students in the latest technological topics on Computer Aided Design, Computer Aided Manufacturing and Computer Aided Engineering Analysis and to prepare them for taking up further research in the areas.To broaden and deepen their capabilities in analytical and experimental research methods, analysis of data, and drawing relevant conclusions for scholarly writing and presentation.
	PCC_ME303L (B.Tech)	Materials Engineering Lab	To provide basic knowledge of science behind materials & physical metallurgy. Introduce the concept of structure property relaons and to give students a feel of how material science is useful in engineering pracces.
	PCC_ME402L (B.Tech)	Solid Mechanics-I Lab	To understand the measurement of mechanical properes of materials . To understand the deformaon behaviour of materials . To understand the kinemac and dynamic characteriscs of mechanical devices
	PCC_ME504L (B.Tech)	Theory of Machines-II-Lab	To impart practical knowledge on design and analysis of mechanisms for the specified type of motion in a machine.
	PCC_ME605L (B.Tech)	Compressible Flow and Machines Lab	This course seeks to provide an introduction to compressible flows, and understand some important features of different categories of compressible flows of ideal gas, isentropic and non isentropic flows including flows across normal shock waves and it's application to gas turbines jet and rocket propulsion, fans and compressors.
	PEC1_ME801L (B.Tech)	Fundaments of Tribology Lab	To impart hands-on praccal exposure on tribological tests and equipment. To study and pracce the various tribological tests that can be performed on pin-on-disk tribometer and equip students with the praccal knowledge req...ired in the tribological field
	PEC2_ME801L (B.Tech)	Composite Materials Lab	To train students to be able to design composite structures, select composite Materials, conduct stress analyses of selected practical applications using laminated plate theories and appropriate strength criteria, and be familiar with the properties and response of composite structures subjected to static and cyclic loading.
	OEC3_DE205 (M. Tech)	Artificial intelligence and Machine Learning	Students will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Artificial Intelligence and Machine Learning. Students will be ethically and socially responsible solution providers and entrepreneurs in the field of Engineering with AI/ML Specialization.
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*
	OEC2_ME705 (B.Tech)	Introduction to Project Management	To understand the general and advanced concepts for Project Management for managing projects under costs and time constraints.
	OEC2_ME802 (B.Tech)	Total Quality Management	Provide the knowledge required to assess and improve product quality through process control procedures and quality improvement techniques.
	PEC2_ME701 (B.Tech)	Energy Systems and Management	To study the various energy Systems and the status for energy sources and technologies, their environment interaction and the relevant global energy policies.
	HSM_DE103 (M.Tech)	Design Thinking	Investigate and think creatively about design problems and opportunities. initiate an attitude of playfulness to aid design thinking. develop visual literacy and articulacy to explain design decisions.
	HSM_DE203 (M.Tech)	Project Management	Students will discover the project life cycle and learn how to build a successful project from pre-implementation to completion. It will introduce project management topics such as resources, costs, time constraints and project scopes.
	OEC2_DE205 (M. Tech)	Cost Management of Engineering Projects	To attain knowledge in Cost Management process and Costing System. Ability to understand the basic concepts of Project planning, execution, and cost control.Discuss about Various types of costs and its behaviour along with Quality Management. Identify various types of Budgets involved in Cost Management process . Broaden the career potential of available techniques and problems available in Cost Management.
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*
11E	List of courses addressing **Environment Issues**:		

	Course Code	*Course Title*	*Brief Justification*
	PEC2_ME701 (B.Tech)	Energy Systems and Management	To study the various energy Systems and the status for energy sources and technologies, their environment interaction and the relevant global energy policies.
	PEC1B_DE105 (M.Tech)	Principle of Solar Engineering	The major objectives of this course to educate students about Solar Energy Engineering and their applications.

11F List of courses addressing **Sustainability issues**:

Course Code	*Course Title*	*Brief Justification*
HSM_DE103 (M.Tech)	Design Thinking	Investigate and think creatively about design problems and opportunities. initiate an attitude of playfulness to aid design thinking. develop visual literacy and articulacy to explain design decisions.
PEC2_ME701 (B.Tech)	Energy Systems and Management	To study the various energy Systems and the status for energy sources and technologies, their environment interaction and the relevant global energy policies.
PEC1B_DE105 (M.Tech)	Principle of Solar Engineering	The major objectives of this course to educate students about Solar Energy Engineering and their applications.

11G List of courses addressing **Other Value Framework** enshrined **in NEP2020/etc.**:

Course Code	*Course Title*	*Brief Justification*

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)**	

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)**	Y

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*
OEC4_DE205 (M. Tech)	Swaym (Moocs)	Online						

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

16B 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*
	MEE-7617	Pre Project	4	200	https://iotme.uok.edu.in/Files/1b8d3dec-0004-4fcc-9e2e-36eb12507392/Menu/all_semesters_compressed_1_f6074
	MEE-7717	Industrial Training	1	200	https://iotme.uok.edu.in/Files/1b8d3dec-0004-4fcc-9e2e-36eb12507392/Menu/all_semesters_compressed_1_f6074
	MEE-8517	Final Year Project	13	200	https://iotme.uok.edu.in/Files/1b8d3dec-0004-4fcc-9e2e-36eb12507392/Menu/all_semesters_compressed_1_f6074
	PSI_ME706	Final Year Project (Stage-I)	4	45	https://1drv.ms/b/s!Ajdw6n6-FQxHlxY_Fjq0AMjhvufC?e=K8nPx0
	PSI_ME804	Final Year Project (Stage-II)	8		https://1drv.ms/b/s!Ajdw6n6-FQxHlxY_Fjq0AMjhvufC?e=K8nPx0
	PSI_ME805	Internship	4		https://1drv.ms/b/s!Ajdw6n6-FQxHlxY_Fjq0AMjhvufC?e=K8nPx0
	AU_DE304 (M.Tech)	Experimental Methods/ Research Mathdology	-	4	https://1drv.ms/b/s!Ajdw6n6-FQxHmHE4t9dd7g6nGQ9t
	DSV_DE305 (M.Tech)	Dissertation Phase-I	8	4	https://1drv.ms/b/s!Ajdw6n6-FQxHmHE4t9dd7g6nGQ9t
	DSV_DE401 (M.Tech)	Dissertation Phase-II	15	4	https://1drv.ms/b/s!Ajdw6n6-FQxHmHE4t9dd7g6nGQ9t
17	**Any other Relevant Information:**				

Sd/-
Dr. Junaid Hassan Masoodi

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.***