

PROGRAM STRUCTURE

I SEMESTER

| S. No | Course Code | Name of the Course | Employability | Skill Development | Entrepreneurship | Remarks |
|-------|-------------|--|---------------|-------------------|------------------|--|
| 1 | 201HS1T01 | Communicative English | | ✓ | | Students are able to demonstrate communication skills to express fluently in both written as well as oral form of language which is very much essential for the career growth. |
| 2 | 201BS1T01 | Differential Equations and Linear Algebra | | ✓ | | Students are able to demonstrate problem solving skills by modelling physical phenomenon using ordinary differential equations, system of linear equations in various engineering disciplines. |
| 3 | 201BS1T02 | Engineering Physics | | | | |
| 4 | 201ES1T03 | Essential Electrical and Electronics Engineering | | ✓ | | This subject helps the student to demonstrate their technical skills by analyzing various electrical networks, knowing the operation of Dc generators, analyzing the performance of single phase transformers and 3-phase induction motors. This will create skills among student so that wherever they will find these types of machine their deal with their complexities. |

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| 5 | 201ES1T05 | Engineering Graphics | | ✓ | | This subject helps the student to demonstrate technical skills as they have knowledge about engineering drawing and AutoCAD software for orthographic projections and isometric projection. |
| 6 | 201HS1L01 | Communicative English Lab | | ✓ | | Students are able to demonstrate technical skills to express fluently in both written as well as oral form of language which is very much essential for the career growth. |
| 7 | 201BS1L01 | Engineering Physics Lab | | | | |
| 8 | 201ES1L03 | Essential Electrical and Electronics Engineering Lab | | ✓ | | This subject helps the student to demonstrate technical skills as they are able to analyze electrical networks using network theorems, performance of AC and DC Machines, diode characteristics and its application and simulation of diode and transistor. |
| 9 | 201MC1T01 | Environment Science | | | | |

II SEMESTER

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|-------|-------------|--|---------------|-------------------|------------------|---|
| 10 | 201BS2T05 | Partial Differential Equations and Vector Calculus | | ✓ | | Students are able to demonstrate problem solving skills by modelling physical phenomenon using partial differential equations, vector differentiation, vector integration and their applications in various engineering disciplines. |
| 11 | 201BS2T08 | Chemistry of Materials | | | | |
| 12 | 201ES2T06 | Engineering Mechanics | | ✓ | | Students are able to acquire skills related to principles of friction, kinetics, kinematics, resolving forces, trusses etc which forms the crux of design sciences. |
| 13 | 201ES2T08 | Programming for Problem Solving using C | ✓ | | | Students are able to acquire skills related to basic programming using C, enabling them to be employed as software developers. |
| 14 | 201ES2L07 | Engineering Workshop | | ✓ | | Engineering Workshop helps the students by improving their skills by knowing the construction of various wooden joints and various fitting joints, by understanding different black smithy work and preparing various sheet metal models. |

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| 15 | 201ES2L12 | Computer Aided Drafting Lab | | ✓ | | Students are able to acquire skills related to drafting of mechanical components/assemblies through AUTOCAD software enabling them to be employed as a design engineer. |
| 16 | 201HS2L02 | Professional Communications Skills Lab | | ✓ | | Students are able to demonstrate technical skills to express fluently in both written as well as oral form of language which is very much essential for the career growth. |
| 17 | 201BS2L05 | Engineering Chemistry Lab | | | | |
| 18 | 201ES2L10 | Programming for Problem Solving using C Lab | ✓ | | | Students are able to acquire skills related to basic programming using C, enabling them to be employed as software developers. |
| 19 | 201MC2T02 | Constitution of India | | ✓ | | This subject helps the student to demonstrate their technical skills for constitution making and its importance for building a democratic India, to make them understand the executive, legislative and judiciary system. |

III SEMESTER

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|-------|-------------|--|---------------|-------------------|------------------|--|
| 20 | 191BS3T11 | Integral Transforms and Applications of Partial Differential Equations | | ✓ | | Students are able to demonstrate problem solving skills by modelling physical phenomenon using partial differential equations and by learning Fourier Transforms and Laplace Transforms and their applications |
| 21 | 191ME3T01 | Fluid Mechanics & Hydraulic Machinery | ✓ | | | Students are able to acquire skills related to concepts of fluid statics, dynamics and performance characteristics of turbines and pumps and enabling them to be employed as a fluid engineer. |
| 22 | 191ME3T02 | Computer Aided Engineering Drawing Practice | | ✓ | | Students are able to acquire skills related to drafting of mechanical components/assemblies through AUTOCAD software enabling them to be employed as a design engineer. |
| 23 | 191ME3T03 | Mechanics of Solids | ✓ | | | Students are able to acquire skills related to bending and shear stresses for beams of various loads and supports enabling them to be employed as a stress analysis engineer in core design industries |
| 24 | 191ME3T04 | Thermodynamics | ✓ | | | Students are able to acquire skills related to various thermodynamic systems and power cycles and enabling them to be employed as Thermodynamic engineer. |

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| 25 | 191ME3T05 | Metallurgy & Material Science | ✓ | | | Students are able to acquire skills related to mechanical behaviour of materials under different loading conditions enabling them to be employed as a materials engineer. |
| 26 | 191ME3L01 | Fluid Mechanics & Hydraulic Machines Lab | | ✓ | | Students are able to demonstrate technical skills in determining the efficiencies of pumps and turbines, enabling them to be employed in 'pipe design industries. |
| 27 | 191ME3L02 | Mechanics of Solids & Metallurgy Lab | | ✓ | | Students are able to acquire skills related to testing of material behaviour under various direct loads, Microstructure of metals Non metals. |
| 28 | 191MC3A03 | Employability skills-I | ✓ | | | This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence. |
| 29 | 191MC3A04 | Essence of Indian Traditional Knowledge | | ✓ | | This subject demonstrate technical skills as they were able to understand concept of Traditional knowledge and its importance, enactments related to the protection of traditional knowledge and traditional knowledge in Agriculture and Medicine. |

IV SEMESTER

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|-------|-------------|---|---------------|-------------------|------------------|---|
| 30 | 191BS4T16 | Numerical Methods & Statistical Techniques | | ✓ | | Students are able to demonstrate problem solving skills by learning numerical methods for solving equations, differential equations, integrals, probability distributions, sampling theory and test of hypothesis. |
| 31 | 191HS4T04 | Managerial Economics and Financial Analysis | | | ✓ | Students are able to demonstrate Competency in gaining the managerial skill set and enabling them to be an entrepreneur. |
| 32 | 191ES4T15 | Internet of Things | ✓ | | | Students are able to acquire skills related to Internet of Things and enabling them to be employed for IoT sector. |
| 33 | 191ME4T06 | Production Technology | ✓ | | | Students are able to acquire skills related to various manufacturing process, different joining techniques and bulk metal deforming processes enable them to be employed as a production engineer in manufacturing industries |
| 34 | 191ME4T07 | Kinematics of Machinery | ✓ | | | Students are able to acquire skills related to the concepts of kinematics of machine elements, chains and mechanisms and enabling them to be employed in mechanical design field. |
| 35 | 191ME4T08 | Thermal Engineering-I | ✓ | | | Students are able to acquire skills related to working of I.C.Engines, Compressors and enabling them to be employed in thermal Power Plants. |

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| 36 | 191ME4L03 | Production Technology Lab | | ✓ | | Students are able to acquire skills related to various manufacturing process, different joining techniques and bulk metal deforming processes. |
| 37 | 191ME4L04 | Computer Aided Machine Drawing | | ✓ | | Students are able to acquire skills related to construction of assembly drawings from the part drawings for manufacturing and enabling them to be employed as a computer aided design engineer. |
| 38 | 191MC4A05 | Employability Skills -II | ✓ | | | This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence. |
| 39 | 191MC4A06 | Biology for Engineers | | ✓ | | Students are able to demonstrate skills related to to biology in a general way by providing a framework for understanding life at the cellular and molecular structures |

V SEMESTER

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| 40 | 171ME5T08 | Dynamics of Machinery | ✓ | | | Students are able to acquire skills in analysing the machines in dynamic conditions and enabling them to be employed in automotive and aerospace industries. |
| 41 | 171ME5T09 | Metal Cutting and Machine Tools | ✓ | | | Students are able to acquire skills and fundamental knowledge on principles of material removal processes, enabling them to be employed in manufacturing industries |
| 42 | 171ME5T10 | Thermal Engineering -II | ✓ | | | Students are able to acquire skills on basic knowledge of Rankine cycle, boilers, chimneys, gas turbines and enabling them to be employed in thermal power plants. |
| 43 | 171ME5T11 | Design of Machine Members-II | ✓ | | | Students are able to acquire skills related to design of machine members and enabling them to be employed in design engineering field. |
| 44 | 171ME5T12 | Operations Research | ✓ | | | Students are able to acquire analytical skills in finding optimal solutions of different models using various decision-making techniques. |
| 45 | 171ME5E01 | Automobile Engineering | ✓ | | | Students are able to acquire skills related to the fundamental working principles and technologies and enabling them to be employed in automotive sector. |

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| 46 | 171ME5E02 | Mechanical Vibrations | ✓ | | | Students are able to acquire skills related to analysis of periodic responses of an vibrating system without and with damping systems. |
| 47 | 171ME5E03 | Additive Manufacturing | ✓ | | | Students are able to acquire skills on basic knowledge of various additive manufacturing processes and enabling them to be employed in manufacturing industries |
| 48 | 171HS5T06 | Employability Skills -III | ✓ | | | This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence. |
| 49 | 171ME5L02 | Theory of Machines Lab | | ✓ | | Students are able to acquire skills related to analysis of mechanisms for a specified type of motion in machine. |
| 50 | 171ME5L03 | Thermal Engineering Lab | | ✓ | | Students are able to acquire analytical skills on working and performance of Incentives and Reciprocating compressors. |
| 51 | 171ME5S01 | MOOCS-I | | ✓ | | Students are able to demonstrate technical skill of various online courses available adding to their curricular courses |

VI SEMESTER

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|-------|-------------|------------------------------------|---------------|-------------------|------------------|---|
| 52 | 171ME6T13 | Heat Transfer | ✓ | | | Students are able to acquire analytical skills on the concept of heat transfer through conduction, convection, radiation and performance of heat exchangers and enabling them to be employed in piping design industries. |
| 53 | 171ME6T14 | Refrigeration and Air Conditioning | ✓ | | | Students are able to acquire skills on working of refrigeration and air conditioning and enabling them to be employed in refrigeration and air conditioning industries. |
| 54 | 171ME6T15 | Metrology and Instrumentation | ✓ | | | Students are able to acquire skills related to the measurement of linear and angular measuring instruments, working of measuring instruments and control systems. |
| 55 | 171ME6E04 | Robotics | ✓ | | | Students are able to acquire skills to understand the concepts of robot kinematics, Dynamics and trajectory planning enabling them to be employed in robot manufacturing companies |
| 56 | 171ME6E05 | Design for Manufacturing | ✓ | | | Students are able to demonstrate technical skills in design of manufacturing through consideration of cost, quality and reliability. |
| 57 | 171ME6E06 | Non-Destructive Evaluation | ✓ | | | Students are able to acquire skills in characterizing the material behavior through different Non-destructive evaluation methods and enabling them to be employed in automotive and aerospace industries. |

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| 58 | 171ME6E07 | Unconventional Machining Processes | ✓ | | | Students are able to acquire skills on modern machining processes and working principles enabling them to be employed in machining industries |
| 59 | 171ME6E08 | Industrial Hydraulics and Pneumatics | ✓ | | | Students are able to demonstrate problem solving skills in analyzing the concepts of hydraulic systems, pneumatic systems and its components. |
| 60 | 171ME6E09 | Quality & Reliability Engineering | ✓ | | | Students are able to acquire skills in improving the quality and reliability of systems and enabling them to be employed in quality control and quality assurance fields |
| 61 | 171HS6T07 | Employability Skills-IV | ✓ | | | This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence. |
| 62 | 171ME6L04 | Machine Tools Lab | | ✓ | | Students are able to acquire skills to operate various machine tools. enabling them to be employed in Manufacturing sector. |
| 63 | 171ME6L05 | Heat Transfer Lab | | ✓ | | Students are able to demonstrate problem solving skills in calculating the heat transfer coefficient through conduction, convection and radiation. |
| 64 | 171ME6L06 | Metrology & Instrumentation Lab | | ✓ | | Students are able to acquire technical skills in measuring linear and angular measurements and calibrate pressure gauge, Temperature detectors and LVDT and enabling them to be employed in material characterization labs and various manufacturing industries. |

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| 65 | 171ME6S02 | MOOCS-II | | ✓ | | Students are able to demonstrate technical skill of various online courses available adding to their curricular courses |

VII SEMESTER

| S. No | Course Code | Name of the Course | Employability | Skill Development | Entrepreneurship | Remarks |
|-------|-------------|------------------------------|---------------|-------------------|------------------|--|
| 66 | 171ME7T16 | CAD/CAM | | ✓ | | Students are able to demonstrate problem solving skills for improving productivity and enhancing the best practices of the company. |
| 67 | 171ME7T17 | Mechatronics | ✓ | | | Students are able to demonstrate technical skills to measure the load, displacement and temperature using analogue and digital sensors. |
| 68 | 171ME7T18 | Finite Element Methods | ✓ | | | Students are able to acquire skills in solving differential equations in fields of structural analysis, heat transfer and fluid flow and enabling them to be employed in mechanical design industries as a FEA-Engineer |
| 69 | 171ME7T19 | Power Plant Engineering | ✓ | | | Students are able to acquire skills in analyzing the power plant economics and environmental considerations enabling them to be employed in power sector. |
| 70 | 171ME7E10 | Computational Fluid Dynamics | ✓ | | | Students are able to acquire skills related to understand the basics of computational fluid dynamics (CFD) and compare finite difference and finite volume methods applied in CFD and enabling them to be employed as Computational fluid dynamics engineer. |

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| 71 | 171ME7E11 | Green Engineering Systems | ✓ | | | Students are able to acquire skills in analyzing the significance of alternative sources of energy, green energy systems. |
| 72 | 171ME7E12 | Nano Materials and Technology | ✓ | | | Students are able to acquire skills related to synthesis and characterization of different nano materials for engineering and technological applications. |
| 73 | 171ME7E13 | Gas Dynamics | ✓ | | | Students are able to acquire skills in analyzing the behavior of isentropic flow of ideal gases and enabling them to be employed gains employment in thermal power plants. |
| 74 | 171ME7E14 | Condition Monitoring | ✓ | | | Students are able to acquire skills in detecting the faults in the systems by monitoring several parameters to prevent major failures. |
| 75 | 171ME7E15 | Flexible Manufacturing Systems | ✓ | | | Students are able to acquire skills in implementing the flexible manufacturing systems and summarize the concepts of advanced flexible manufacturing systems. |
| 76 | 171ME7L07 | CAD/CFD Lab | | ✓ | | Students are able to acquire skills related to fundamental knowledge on various analytical tools for engineering simulation and enabling them to be employed in areas of computer aided design |
| 77 | 171ME7L08 | CAM/Mechatronics Lab | | ✓ | | Students are able to acquire skills in constructing the Computed numerical control programming for various machining operations, construct ladder diagrams for logical operations. |

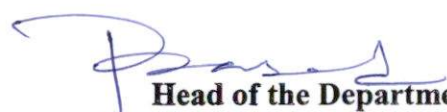
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|-------|-------------|---|---------------|-------------------|------------------|--|
| 78 | 171ME7P01 | Industry Oriented (Internship) Mini Project | | ✓ | | Students will be able to demonstrate problem identification, analysis, design solutions or applications in mechanical engineering domain through the acquired technical, cognitive, communication and creative skills to address societal needs. |

VIII SEMESTER

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|--------------|-------------|---------------------------------|---------------|-------------------|------------------|--|
| 79 | 171ME8E16 | Production Planning and Control | ✓ | | | Students are able to acquire skills in improving the concepts of production planning and production control techniques enabling them to be employed in manufacturing industries. |
| 80 | 171ME8E17 | Advanced Materials | ✓ | | | Students are able to acquire skills in synthesis and characterization of advanced materials. |
| 81 | 171ME8E18 | Thermal Equipment Design | ✓ | | | Students are able to acquire skills in analyzing the performance of different types of heat exchangers, vaporizer, evaporators enabling them to be employed in pipe design industries |
| 82 | 171ME8O03 | Entrepreneur Resource Planning | | | ✓ | The students are able to acquire skills related to ERP-SCM, which enable them to be employed in Software companies |
| 83 | 171ME8O04 | Computer Graphics | ✓ | | | Students are able to acquire related 2D,3D graphical representations and basic graphic programming using OpenGL enabling them to be employed as graphic designer. |
| 84 | 171ME8P02 | Major Project | | ✓ | | Students will be able to demonstrate problem identification, analysis, design solutions or applications in mechanical engineering domain through the acquired technical, cognitive, communication and creative skills to address societal needs. |
| Total | | 84 | 44 | 33 | 2 | |



Program Coordinator



Head of the Department
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