

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.
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.

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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

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
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	✓			Students are able to acquire skills related to creation, characterization and application 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

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
20	201BS3T12	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	201ME3T01	Production Technology	✓			Students are able to acquire skills related to various manufacturing process, different joining techniques and bulk metal deforming processes enabling them to be employed in manufacturing industries
22	201ME3T02	Fluid Mechanics & Hydraulic Machines	✓			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.
23	201ES3T15	Thermodynamics	✓			Students are able to acquire skills related to various thermodynamic systems and power cycles and enabling them to be employed as Thermodynamic engineer.
24	201ES3T16	Metallurgy & Material Science	✓			Students are able to acquire skills related to basic concepts of Metallurgy and materials science and various types of heat treatments of alloys and can be employed as a material science engineer.

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25	201ME3T01	Computer Aided Machine Drawing Lab		✓		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.
26	201ME3L01	Production Technology Lab		✓		Students are able to acquire skills related to various manufacturing process, different joining techniques and bulk metal deforming processes.
27	201ME3L02	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 piping design industries.
28	201SC3L03	Skill oriented Course-I(Java Programming Lab)	✓			Students are able to acquire skills related to SQL commands, constraints, views, models, transactions, storage and indexing enabling them to be employed for backend developer
29	201MC3T03	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

IV SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
30	201BS4T15	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	201HS4T04	Industrial Engineering and Management			✓	Students are able to demonstrate Competency to understand the knowledge of industrial engineering domain and enabling them to be an entrepreneur.
32	201ME4T03	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.
33	201ME4T04	Theory of Machines-I	✓			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.
34	201ME4T05	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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35	201ME4L04	Theory of Machines Lab		✓		Students are able to acquire skills related to analysis of mechanisms for a specified type of motion in machine.
36	201ME4L05	Mechanics of Solids & Metallurgy Lab		✓		Materials engineering subject develops the skill improvement of the student as it makes the student to understand the basic concepts of Metallurgy and materials science and various types of heat treatments of alloys. This helps the student to understand the melting point of different minerals and mixing of alloys to make a metal more efficient and durable.
37	201ME4L06	Thermal Engineering Lab		✓		Students are able to acquire analytical skills on working and performance of Incentives and Reciprocating compressors.
38	201SC4L15	Python Programming Lab	✓			Students are able to acquire skills related to python programming, enabling them to be employed as software developers.
39	201MC4T04	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.

V SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
40	191ME5T09	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	191ME5T10	Design of Machine members-I	✓			Students are able to acquire skills related to design of machine members and enabling them to be employed in design engineering field.
42	191ME5T11	Thermal Engineering -II	✓			Students are able to acquire skills on basic knowledge of Rankine cycles, boilers, chimneys, gas turbines and enabling them to be employed in thermal power plants.
43	191ME5E01	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.
44	191ME5E02	Composite Materials	✓			Students are able to acquire skills related to design of unidirectional composites and laminates and can be placed as a materials engineer
45	191ME5E03	Fluid Engineering	✓			Students are able to acquire skills related to the efficiency of reciprocating and rotary pumps and compressors.

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46	191ME5E04	Mechanical Vibrations	✓			Students are able to acquire skills related to analysis of periodic responses of an vibrating system without and with damping systems.
47	191ME5E05	Metrology & Instrumentation	✓			Students are able to acquire skills related to the measurement of linear and angular measuring instruments, working of measuring instruments and control systems.
48	191ME5E06	Organizational Behavior	✓			Students are able to acquire skills on organizational communication and culture to cope up with the organization in a better way.
49	191CE5O01	Basic Concrete Technology	✓			Students are able to acquire cognitive skills related to properties of concrete, design and test the concrete useful in constructional activities enabling them to be employed in constructional sector.
50	191EE5O01	Electrical Safety	✓			Students are able to acquire skills related to mitigating some of the potential transmission of electrical power challenges that enables them to get employed in power transmission company.
51	191EE5O02	Electrical Materials	✓			Students are able to acquire skills related to electrical materials and enables them to get employed in power transmission company.
52	191EE5O03	Basic electrical Measurements	✓			Students are able to acquire skills related to various types of electrical parameters that enable them to get employed in core (electrical) industry/company related to measurements of electrical parameters.

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53	191EC5O01	Signals& Systems		✓		Students are able to acquire skills related to mathematics of signal processing that aids them in getting jobs in industries that use X-rays, MRIs and CT scans, allowing medical images to be analysed and deciphered by complex data processing techniques.
54	191EC5O02	Digital Electronics& Logic Design	✓			Students are able to acquire skills related to design, and synthesize basic of digital ckts enabling them to be employed for designing and manufacturing of electronic equipment.
55	191EC5O03	Semi-conductor devices	✓			Students are able to acquire skills related to the various power electronic drives which enables them to get employed in semiconductor-based industries such as in communications, computing, health care, military systems, transportation, clean energy, etc.
56	191CS5O01	Data structures	✓			Students are nurtured with the internal organization and functioning of Computer System and enabling them to get employed in the hardware sectors of computers.
57	191CS5O02	Object oriented programming through C++	✓			Students are able to acquire skills related to concepts of object-oriented programming and process of data file manipulations using C++, enabling them to be employed as software developers.
58	191CS5O03	Java Programming	✓			Students are able to acquire skills related to java programming enabling them to be employed as software developers.

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59	191CS5004	R programming	✓			Students are able to acquire skills related to R commands, Graphical representation of data sets, and visualization Techniques and also enabling them to be employed for Data analyst
60	191IT5001	Data Base Management Systems	✓			Students are able to acquire skills related to Writing SQL Queries, implement normalization techniques and apply transaction processing techniques enabling them to be employed as a Database Administrator.
61	191IT5002	Computer Graphics	✓			Students are able to demonstrate technical skill to develop graphical applications using line, polygon, curve drawing and clipping algorithms, design 2d and 3d applications.
62	191MI5001	Overview of Mining		✓		This course demonstrates the technical skills of the student by giving them knowledge about life cycle of mines, ventilation, lighting and permanent lining of underground mines. It also gives knowledge about modern techniques of shaft sinking.
63	191PT5001	Process Intensification in Petroleum industry		✓		Students are able to demonstrate technical skill of characterizing different intensifications, modelling and analysis of process in Petroleum Industry.
64	191PT5002	Fundamentals of Petroleum Industry		✓		Students are able to demonstrate technical skill of characterizing different streams, modelling and analysis of petroleum industry.

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65	191AG5O01	Basic Crop Production Practices	✓			Students are able to acquire skills related to production practices and management techniques of agricultural and horticultural crops enabling them to be employed as agricultural field manager
66	191ME5L05	Metrology/ICS 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.
67	191ME5L06	Theory of Machines Lab		✓		Students are able to acquire skills related to analysis of mechanisms for a specified type of motion in machine.
68	191ME5L07	Thermal Engineering Lab		✓		Students are able to acquire analytical skills on working and performance of Incentives and Reciprocating compressors.
69	191HS5T06	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.

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70	191PR5P02	Socially Relevant Project	✓			Students will be able to demonstrate problem identification, analysis, design solutions or applications in electronics and communication domain through the acquired technical, cognitive, communication and creative skills to address societal needs.
71	191MC5A08	Intellectual Property Rights and Patents			✓	It helps the graduates safe guard the IP and innovations at their place of work.

VI SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
72	191ME6T12	Heat Transfer	✓			Students are able to acquire analytical skills on the concept of heat transfer through conduction, convection, radiation and performance of heat exchangers enabling them to be employed in piping design industries.
73	191ME6T13	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.
74	191ME6T14	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
75	191ME6E07	Industrial Engineering and Management			✓	Students are able to demonstrate Competency to understand the knowledge of industrial engineering domain and enabling them to be an entrepreneur.
76	191ME6E08	Mechatronics	✓			Students are able to demonstrate Competency to understand the knowledge of industrial engineering domain and enabling them to be an entrepreneur.

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77	191ME6E09	Non-Destructive Evaluation	✓			Students are able to acquire skills in characterizing the material behaviour through different Non-destructive evaluation methods and enabling them to be employed in automotive and aerospace industries.
78	191ME6E10	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.
79	191ME6E11	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
80	191ME6E12	Additive Manufacturing	✓			Students are able to acquire skills on basic knowledge of various additive manufacturing processes and enabling them to be employed in manufacturing companies.
81	191ME6E13	Alternative Fuels	✓			Students are able to demonstrate technical skills on properties, performance and emission characteristics of various alternative fuels.
82	191ME6E14	Design for Manufacturing	✓			Students are able to demonstrate technical skills in design of manufacturing through consideration of cost, quality and reliability.
83	191ME6E15	Green Engineering Systems	✓			Students are able to acquire skills in analyzing the significance of alternative sources of energy, green energy systems.

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
84	191ME6E16	Lean Manufacturing	✓			Students are able to acquire skills to apply various tools related to primary and secondary manufacturing processes.
85	191CE6O02	Disaster Management	✓			Students are able to acquire skills related to interpretation of various disasters in the environment and prepares one to prevent, face and combat them enabling them to be employed as managers in various industries
86	191EE6O04	Energy Audit and Conservation Management			✓	The course focuses on the loss and profit studies and other company maintenance activities, creates the interest among the students to have own company.
87	191EE6O05	Non-Conventional Energy Resources	✓			Students are able to acquire skills related to various types of pivotal role in the development of a sustainable energy supply enabling the students to get employed in renewable energy generation sector.
88	191EE6O06	Instrumentation	✓			Students are able to acquire skills related to various types of electrical instruments that enable them to get employed in core (electrical) industry/company related to instrumentation of electrical parameters.
89	191ME6O07	Biomedical Instrumentation	✓			Students are able to acquire skills to understand and apply the biomedical instrumentation enabling them to be employed in various organizations, which developed and fabricate biomedical instruments like ECG etc.

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
90	191ME6O08	ECAD Tools	✓			Students are able to acquire skills related to ECAD tools, enabling them to be employed as Design engineers
91	191CS6O05	Python Programming	✓			Students are able to acquire skills related to python programming, enabling them to be employed as software developers.
92	191CS6O06	Operating Systems	✓			Students are able to understand and acquire skills related to features and functionalities of operating System and understand the utilization of Input & output and memory operations which enables them to be employed for Hardware core side job opportunities
93	191CS6O07	Web Technologies	✓			Students are able to acquire skills related to developing web pages, enabling them to be employed as front end developers.
94	191CS6O08	Cyber Security	✓			Students are able to acquire technical skills related to Cyber security and enabling them to be employed for cyber security sector.
95	191CS6O09	AR/VR	✓			Students are able to acquire skills related to Design, create, and integrate audio, visual, and interactive elements into a comprehensive immersive experience enabling them to be employed as app developers.
96	191IT6O03	Computer Organization	✓			Students are able to acquire technical skills which help them to work with the internal organization and functioning of Computer System and enabling them to get employed in the hardware sectors of computers.

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
97	191IT6O04	AI Tools & Techniques		✓		Students are able to demonstrate technical skill of searching techniques used in AI, Expert systems, Knowledge representation and fuzzy logic.
98	191IT6O05	Robotic Process Automation		✓		Students are able to demonstrate technical skill to develop applications using UIPath Programming and extraction techniques to deploy robot configurations
99	191MI6O02	Industrial Safety Practices			✓	This course helps to enable the students learn about environmental factors related to human, to enrich the students with anthropometric principles for work space design and to make the students to acquire knowledge on advance effects of air pollution, safety regulations and standards.
100	191MI6O03	Electrical Equipment's in Mines		✓		This subject helps the student to demonstrate their technical skills as it helps the students to understand standards of lighting in different working areas, AC and Dc motors and its maintenance, earthing methods and applicability. This subject will guide the students of mining to be self-sufficient for the electrical related problems in mines.
101	191PT6O03	Unconventional Hydrocarbon Resources		✓		Students are able to demonstrate technical skill of characterizing different unconventional resources, modelling and analysis of reserves.
102	191PT6O04	Asset Management			✓	Students are able to demonstrate Competency in the domain of Integrated asset management enabling them to become an entrepreneur.

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103	191AG6O02	Weather Forecast in Agriculture	✓			Students are able to acquire skills related to biomass and agrochemical conversion techniques, biomass production and bio-diesel production enabling them to be employed in any bio mass energy sector.
104	191AG6O03	Bio-energy Systems Design and Applications	✓			Students are able to acquire skills related to biomass and agrochemical conversion techniques, biomass production and bio-diesel production enabling them to be employed in any bio mass energy sector.
105	191ME6L08	Machine Cutting and Machine Tools Lab		✓		Students are able to acquire skills to operate various machine tools. enabling them to be employed in Manufacturing sector.
106	191ME6L09	Heat Transfer Lab		✓		Students are able to demonstrate problem solving skills in calculating the heat transfer coefficient through conduction, convection and radiation.
107	191HS6T07	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.
108	191MC6A09	Professional Ethics and Human Values		✓		This subject help the students to demonstrate their skills as they inculcate human values to grow as responsible human beings with proper personality and helps them to maintain ethical conduct and discharge their professional duties.

VII SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
109	171ME7T16	CAD/CAM	✓			Students are able to demonstrate problem solving skills for improving productivity and enhancing the best practices of the company.
110	171ME7T17	Mechatronics	✓			Students are able to demonstrate technical skills to measure the load, displacement and temperature using analogue and digital sensors.
111	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
112	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.
113	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.
114	171ME7E11	Green Engineering Systems	✓			Students are able to acquire skills in analyzing the significance of alternative sources of energy, green energy systems.

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115	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.
116	171ME7E13	Gas Dynamics	✓			Students are able to acquire skills in analyzing the behaviour of isentropic flow of ideal gases and enabling them to be employed gains employment in thermal power plants.
117	171ME7E14	Condition Monitoring	✓			Students are able to acquire skills in detecting the faults in the systems by monitoring several parameters to prevent major failures.
118	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.
119	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
120	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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121	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

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
122	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.
123	171ME8E17	Advanced Materials	✓			Students are able to acquire skills in synthesis and characterization of advanced materials.
124	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
125	171CE8O03	Electrical Safety Management	✓			Students are able to demonstrate safety skills by providing knowledge on hazards with growing penetration of electrical devices in strategic areas including Space, mining and Nuclear energy.
126	171ME8O03	Neural networks and fuzzy logic			✓	Students are able to acquire skills related to design, synthesize and evaluate the performance of ANN enabling them to be employed for designing artificial intelligence systems

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127	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		127	74	42	7	


Program Coordinator
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