

# SRI INDU INSTITUTE OF ENGINEERING & TECHNOLOGY

(Formerly RVR Institute of Engineering & Technology)

Approved by AICTE, New Delhi and Affiliated to JNTUH.

Recognized under 2(f) of UGC Act 1956.

Sheriguda (V), Ibrahimpatnam (M), R.R. Dist., Telangana-501 510.

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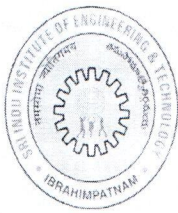
## DEPARTMENT OF MECHANICAL ENGINEERING

### COURSE OUTCOMES (COs)

Course Outcomes (COs) describe what students can able to do after completion of the course.

S.No	Year /Sem	Course Code	Course Name	Course Outcomes (After completion of the course student can able to :)
1	II/I	MA301BS	Probability and Statistics & Complex Variables	<b>CO1:</b> Describe the use of Baye's theorem techniques when solving the problems.
				<b>CO2:</b> Solve the problems on Binomial and Geometric Distributions.
				<b>CO3:</b> Determine the testing of Hypothesis by using Type-I and Type-II errors.
				<b>CO4:</b> Identify the Different types of Hypothesis.
				<b>CO5:</b> Describe the complex function with their analyticity, integration using Cauchy's Integral and Residue theorem.
				<b>CO6:</b> Discuss the Taylor's and Laurent series expansions.
2	II/I	ME302PC	Mechanics of Solids	<b>CO1:</b> Define the fundamental of stress and strain and the relationship between both equations in order to solve problems for simple tri-dimensional elastic solids & thermal stress, strain energy.
				<b>CO2:</b> Differentiate the different type of beams & loads and also calculate the shear force and bending moments diagram and their relations.
				<b>CO3:</b> Explain the Flexural Stresses, Assumptions & equations and also Shear stress distribution across various beams sections.
				<b>CO4:</b> Analyze Principal Stresses and Strains problem identification, formulation and solution using a range of analytical methods and also calculate the Various theories of failure.
				<b>CO5:</b> Apply the loads Torsion of Circular Shafts and also calculate Theory of pure torsion, Assumptions & Thin Cylinders Derivation of formula for stress & strain.
				<b>CO1:</b> Analyze the Structure of materials at different levels, basic concepts of crystalline materials like unit cell, FCC, BCC, HCP, APF (Atomic Packing Factor), Co-ordination Number etc.
				<b>CO2:</b> Identify concept of mechanical behaviours, strength & properties of different metallic materials.
				<b>CO3:</b> Differentiate different phase & phase diagram &

  
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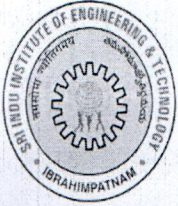
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3	II/I	ME303PC	Material Science and Metallurgy	understand the basic terminologies associated with metallurgy. Construction and identification of phase diagrams and reactions.
				<b>CO4:</b> Identify and suggest the heat treatment process & types. Significance of properties Vs microstructure . Surface hardening & its types. Introduce the concept of harden ability & demonstrate the test used to find harden ability of steels.
				<b>CO5:</b> Summarize the different classification & application of advanced materials like ceramics, polymers & composites.
				<b>CO6:</b> Study the different classification & application of advanced materials like composites, polymers & ceramics.
4	II/I	ME304PC	Production Technology	<b>CO1:</b> Formulate the process of casting and different allowances occurred during the casting and also different material selection for the patterns.
				<b>CO2:</b> Design core, core print and Gating System in metal Casting System.
				<b>CO3:</b> Describe different types of welding process for joining of similar and dis-similar metals.
				<b>CO4:</b> Analyze the welding defects by different processes.
				<b>CO5:</b> Classify the different types of joining process like Hot working, cold working Blanking and piercing – Bending and forming wire drawing and Tube drawing.
				<b>CO6:</b> Apply the different types Extrusion process & Forging process.
5	II/I	ME305PC	Thermo Dynamics	<b>CO1:</b> Differentiate between different thermodynamic systems and processes and compare Macroscopic and Microscopic Approaches of Thermodynamics.
				<b>CO2:</b> Apply the laws of thermodynamics to different types of systems. Undergoing various processes and flow system, prepare efficiency of Heat Engine and COP of Heat Pump, Refrigerator.
				<b>CO3:</b> Define the various properties of pure substances, the concept of perfect Gas laws, Carnot engine and also draw the P-V,T-S,P-T and H-S diagrams of pure substance.
				<b>CO4:</b> Define the various non-flow processes, flow processes heat & work Transfer, Vander Waals equation, dryness fraction, Dalton's law of partial pressure, Avogadro's law, enthalpy and entropy.
				<b>CO5:</b> Define the various non-flow processes, flow



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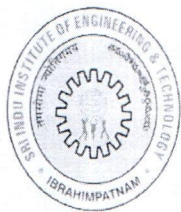
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				<p>processes heat &amp; work Transfer, Vander Waals equation, dryness fraction, Dalton's law of partial pressure, Avogadro's law, enthalpy and entropy.</p> <p><b>CO6:</b> Analyze the thermodynamic cycles and evaluate performances Parameters.</p>
6	II/I	ME306PC	Production Technology Lab	<p><b>CO1:</b> Understand the properties of moulding sands.</p> <p><b>CO2:</b> Understand the properties of Pattern making.</p> <p><b>CO3:</b> Understand Fabricate joints using gas welding and arc welding.</p> <p><b>CO4:</b> Evaluate the quality of welded joints.</p> <p><b>CO5:</b> Basic idea of press working tools.</p> <p><b>CO6:</b> Perform moulding studies on plastics.</p>
7	II/I	ME307PC	Machine Drawing Practice	<p><b>CO1:</b> Prepare engineering and working drawings with dimensions and bill of material during design and development. Develop assembly drawings using part drawings of machine components.</p> <p><b>CO2:</b> Understand representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribs.</p> <p><b>CO3:</b> Analyze types of sections – selection of section planes and drawing of sections and auxiliary sectional views.</p> <p><b>CO4:</b> Understand Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and tapered features.</p> <p><b>CO5:</b> Analyze title boxes, their size, location and details - common abbreviations and their liberal usage.</p> <p><b>CO6:</b> Compare types of Drawings – working drawings for machine parts.</p>
8	II/I	ME308PC	Material Science and Mechanics of Solids Lab	<p><b>CO1:</b> Students will be able to understand basic concepts of stress, strain and their relations based on linear elasticity. Material behaviours due to different types of loading will be discussed.</p> <p><b>CO2:</b> Predict the behaviour of the material under impact conditions.</p> <p><b>CO3:</b> Understand the procedure of doing hardness test for different materials.</p> <p><b>CO4:</b> Analyze the different materials applying loads due to compression, tension, shear, torsion.</p> <p><b>CO5:</b> Understand to beams of different type loads duo to the bending moment.</p>
				<p><b>CO1:</b> Understand meaning, features, characteristics of constitution law and constitutionalism.</p> <p><b>CO2:</b> Describe fundamental rights, fundamental duties</p>

  
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9	II/I	MC309	Constitution of India	and its legal status.
				<b>CO3: Describe</b> The constitution powers and status of the President of India.
				<b>CO4:</b> Understand Emergency Provisions: National Emergency, President Rule, And Financial Emergency.
				<b>CO5:</b> Understand Fundamental Right to Equality, Fundamental Right to certain Freedom under Article 19.
				<b>CO6:</b> Describe the Scope of the Right to Life and Personal Liberty under Article 21.
10	II/II	EE401ES	Basic Electrical and Electronics Engineering	<b>CO1:</b> Understand the basic electrical circuit elements and different ac circuits.
				<b>CO2:</b> Understand the installation of different electrical equipments.
				<b>CO3:</b> Describe the working of different transformers.
				<b>CO4:</b> Understand the principles of DC motors.
				<b>CO5:</b> Analyze the different diodes, rectifiers and filters.
11	II/II	ME402PC	Kinematics of Machinery	<b>CO1:</b> Differentiate suitable mechanisms like four bar chain mechanism, crank slatter quick return motion mechanism for different applications (shaping machine and slotting machine.
				<b>CO2:</b> Draw velocity and displacement diagrams by applying different methods such as instantaneous centre method, graphical method and analysis of mechanism.
				<b>CO3:</b> Different mechanisms in different situations like straight line mechanisms and steering gear mechanisms.
				<b>CO4:</b> Knowledge of the principles to draw the different CAM profiles with different followers.
				<b>CO5:</b> Select the gear and gear trains for the various applications Pinion & gear & pinion and rock arrangement.
12	II/II	ME403PC	Thermal Engineering - I	<b>CO1:</b> Explain the working principle and the components of Internal Combustion engines.
				<b>CO2:</b> Analyze the losses occurs during combustion process and expertise in the concept of combustion process.
				<b>CO3:</b> Describe the operations of reciprocating air compressor and apply their knowledge in compressed air applications.
				<b>CO4:</b> Gain the knowledge in working principles of rotary air compressors such as single and multiple vane, roots, screw and scroll type.
				<b>CO5:</b> Explain and Analyze the various gas turbine



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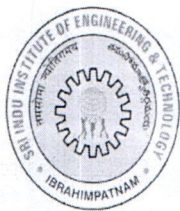
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				power plant and its cycles.
13	II/II	ME404PC	Fluid Mechanics and Hydraulic Machines	<b>CO1:</b> Classify the effect of fluid properties on a flow system and also point out pressure and its measurements.
				<b>CO2:</b> Classify type of fluid flow patterns and apply continuity equation, momentum equation, Euler's and Bernoulli's equations for flow along a stream line.
				<b>CO3:</b> Classify boundary layer concepts and submerged objects and also point out drag and lift Force.
				<b>CO4:</b> Develop a variety of practical fluid flow and flow measuring devices and utilize fluid mechanics principles in flow through pipes design.
				<b>CO5:</b> To develop an appropriate turbine with reference to given situation in power plants and also develop impact of jet on vanes.
				<b>CO6:</b> To summarize performance parameters of a given Centrifugal and Reciprocating pumps.
14	II/II	ME405PC	Instrumentation and Control Systems	<b>CO1:</b> Understand knowledge of field instrumentations.
				<b>CO2:</b> Understand the study of measurement of displacement, temperature, pressure measurements.
				<b>CO3:</b> Understand measurement of liquid level and flow, speed, acceleration, vibration measurement.
				<b>CO4:</b> Understand the application of strain gauges.
				<b>CO5:</b> Understand the measurement of humidity, force, torque and power.
				<b>CO6:</b> Understand the study of control systems in processes.
15	II/II	ME407PC	Fluid Mechanics & Hydraulic Machines Lab	<b>CO1:</b> Identify importance of various fluid properties at rest and in transit.
				<b>CO2:</b> Apply general governing equations for various fluid flows.
				<b>CO3:</b> Understand the concept of boundary layer theory and flow separation.
				<b>CO4:</b> Plot velocity and pressure profiles for any given fluid flow.
				<b>CO5:</b> Evaluate the performance characteristics of hydraulic turbines.
				<b>CO6:</b> Evaluate the performance characteristics of pumps.
16	II/II	ME408PC	Instrumentation & Control Systems Lab	<b>CO1:</b> Characterize and calibrate measuring devices.
				<b>CO2:</b> Identify and analyze errors in measurement.
				<b>CO3:</b> Analyze measured data using regression analysis.
				<b>CO4:</b> Calibration of Pressure Gauges, temperature, LVDT, capacitive transducer and rotameter.
				<b>CO5:</b> Analyze use of a Seismic pickup for the

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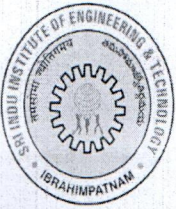
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				measurement of vibration amplitude of an engine bed at Various loads.
				<b>CO6:</b> Understand the SCADA system.
17	II/II	EE409ES	Basic Electrical and Electronics Engineering Lab	<b>CO1:</b> Understand behavior of different electrical components.
				<b>CO2:</b> Formulate and solve AC,DC circuits.
				<b>CO3:</b> Realize the requirement of transformers.
				<b>CO4:</b> Explain the properties of electromagnetic circuit.
				<b>CO5:</b> Understand the principles of various electrical circuits.
				<b>CO6:</b> Understand working principles of various analogue electrical measuring instruments.
18	II/II	MC409	Gender Sensitization Lab	<b>CO1:</b> Develop sensibility with regard to issues of gender in contemporary India.
				<b>CO2:</b> Provide a critical perspective on the socialization of men and women.
				<b>CO3:</b> Determine information about some key biological aspects of genders.
				<b>CO4:</b> Debate on the politics and economics of work.
				<b>CO5:</b> Reflect critically on gender violence.
				<b>CO6:</b> Expose more egalitarian interactions between men and women.
19	III/I	ME501PC	Design of Machine Members-I	<b>CO1:</b> The student acquires the knowledge about the principles of design, material selection, selection of manufacturing process, component behavior subjected to loads, and criteria of failure.
				<b>CO2:</b> Understands the concepts of principal stresses, stress concentration in machine members and fatigue loading.
				<b>CO3:</b> An ability to select the appropriate joints according to the various applications.
				<b>CO4:</b> An ability to select the appropriate joints according to the various applications.
				<b>CO5:</b> Design of solid shaft and hollow shaft on the basis of strength and rigidity and analyze the stresses and strains induced in a machine element.
20	III/I	ME502PC	Thermal Engineering-I	<b>CO1:</b> Explain the working principle and the components of Internal Combustion engines.
				<b>CO2:</b> Analyze the losses occurs during combustion process and expertise in the concept of combustion process.
				<b>CO3:</b> Describe the operations of reciprocating air compressor and apply their knowledge in compressed air applications.

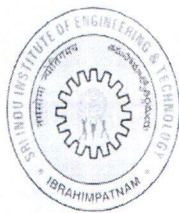


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				<p><b>CO4:</b> Gain the knowledge in working principles of rotary air compressors such as single and multiple vane, roots, screw and scroll type.</p> <p><b>CO5:</b> Explain and Analyze the various gas turbine power plant and its cycles.</p>
21	III/I	ME503PC	Metrology & Machine Tools	<p><b>CO1:</b> Differentiate Understand working of lathe, shaper, planner, drilling, milling and grinding machines.</p> <p><b>CO2:</b> Differentiate Comprehend speed and feed mechanisms of machine tools.</p> <p><b>CO3:</b> Estimate machining times for machining operations on machine tools.</p> <p><b>CO4:</b> Identify techniques to minimize the errors in measurement.</p> <p><b>CO5:</b> Identify methods and devices for measurement of length, angle, and gear &amp; thread parameters, surface roughness and geometric features of parts.</p> <p><b>CO6:</b> Handle the various measuring instruments in quality assurance department of industries.</p>
22	III/I	SM504MS	Fundamentals of Management	<p><b>CO1:</b> Write the working principle of fundamentals of management basics.</p> <p><b>CO2:</b> Setup Planning Process and develops the Decision Making and Problem Solving skills.</p> <p><b>CO3:</b> Explains Organization principles, Design, Structures and basic fundamentals of Organization.</p> <p><b>CO4:</b> Analyze Leadership styles and handling employee and customer complaints, and motivational theories.</p> <p><b>CO5:</b> What is controlling, types, strategies, steps characteristics and process of controlling?</p> <p><b>CO6:</b> What is HRM and Human Resource Planning, Recruitment and Selection, &amp; Training and Development.</p>
23	III/I	CE511OE	Disaster Management	<p><b>CO1:</b> Identify the types of disaster and vulnerabilities.</p> <p><b>CO2:</b> Describe the basic concepts of the emergency management cycle (mitigation, preparedness, response, and recovery).</p> <p><b>CO3:</b> Describe the understanding in capacity building concepts and planning of disaster managements.</p> <p><b>CO4:</b> Describe the coping with disaster and strategies.</p> <p><b>CO5:</b> Explain the roles of government agencies in emergency management.</p> <p><b>CO6:</b> Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.</p>



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24	III/I	ME505PC	Thermal Engineering Lab	<b>CO1:</b> Mention working principles of different engines.
				<b>CO2:</b> Evaluate the performance of IC engines and compressors under the given operating conditions.
				<b>CO3:</b> Test the power in the engine cylinder.
				<b>CO4:</b> Find the efficiencies of different engines.
				<b>CO5:</b> Test the frictional power of the engine.
				<b>CO6:</b> Draw timing diagrams for SI/CI engines.
25	III/I	ME506PC	Machine Tools Lab	<b>CO1:</b> Study the various parts and working principles of lathe, Drilling Machine, Milling Machine and Shaper Machine.
				<b>CO2:</b> Study the various parts and working principles of Planning Machine, Slotting Machine, Cylindrical Grinder, Surface Grinder and Tool and Cutter Grinder.
				<b>CO3:</b> Perform step turning and taper turning operations on lathe machine.
				<b>CO4:</b> Perform Thread Cutting and Knurling operation on lathe machine.
				<b>CO5:</b> Perform Drilling and Tapping operation on Radial Drilling Machine.
				<b>CO6:</b> Produce Flat surfaces and Cut key ways on shaper and planner machine.
26	III/I	ME507PC	Engineering Metrology Lab	<b>CO1:</b> Students able to study the different parameters related to Gear's Chordal Addendum & Chordal height by using vernier callipers.
				<b>CO2:</b> Examine the Errors in Alignment of tools on machine by using Dial indicator.
				<b>CO3:</b> Study the Application of Microscope in Tool making.
				<b>CO4:</b> Angles and Tappers of different sections are studied by Bevel Protractor & Sinebar's.
				<b>CO5:</b> Study the flatness of surface plate by using the spirit level.
27	III/I	MC500HS	Professional Ethics	<b>CO1:</b> Understand importance of values and ethics in their personal lives & professional careers.
				<b>CO2:</b> Describe basic theories like virtue theory, rights theory, casuist theory.
				<b>CO3:</b> Understand professional practices in engineering field.
				<b>CO4:</b> Describe central responsibilities of engineers.
				<b>CO5:</b> Understand work place rights and responsibilities.
				<b>CO6:</b> Analyze various global issues in professional ethics.





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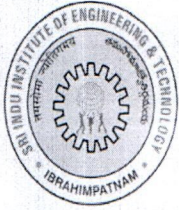
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28	III/II	ME602PC	Design of Machine Members-II	<p><b>CO1:</b> Gain the Knowledge on journal bearing design using different empirical relations.</p> <p><b>CO2:</b> Select and design a rolling contact bearing for different types of loads and estimate the life of rolling contact bearings.</p> <p><b>CO3:</b> Design the various internal combustion engine components like connecting rod, piston.</p> <p><b>CO4:</b> Design the helical coil springs for different applications under fatigue loading condition.</p> <p><b>CO5:</b> Compare the belts and rope ways based on their power transmission and Application.</p> <p><b>CO6:</b> Knowledge on the strength of gears and various places used different gears depend upon various applications.</p>
29	III/II	ME603PC	Heat Transfer	<p><b>CO1:</b> Explain the basic modes and mechanisms of heat transfer.</p> <p><b>CO2:</b> Analyze one dimensional steady state and unsteady state conduction heat transfer.</p> <p><b>CO3:</b> Solve convective heat transfer problems of natural and forced convection heat transfer.</p> <p><b>CO4:</b> Design the different heat exchanger for various industrial applications like Chemical industry, food processing and refrigeration plants.</p> <p><b>CO5:</b> Compare the boiling, Condensation and radiation heat transfer.</p> <p><b>CO6:</b> Apply the knowledge of heat transfer in aerospace industries.</p>
30	III/II	ME612PE	Refrigeration & Air conditioning	<p><b>CO1:</b> Learn the working principle of air refrigeration systems, vapor refrigeration systems and air conditioning systems.</p> <p><b>CO2:</b> Understand the construction and working of various components of Refrigeration and Air conditioning systems.</p> <p><b>CO3:</b> Find out the COP of various refrigeration system and air conditioning systems.</p> <p><b>CO4:</b> Differentiate between different types of refrigeration systems with respect to application as well as conventional and unconventional refrigeration systems.</p> <p><b>CO5:</b> Apply the thermodynamic principles to design the refrigeration and air conditioning loads for the industrial applications.</p>

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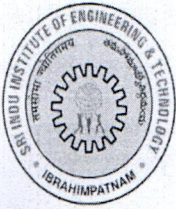
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31	III/II	ME601PC	Thermal Engineering – II	CO1: Explain working principle and components of steam power plant and boilers.
				CO2: Apply the laws of thermodynamics to analyze thermodynamic cycles.
				CO3: Describe the classification and principle operation of steam turbine.
				CO4: Differentiate of methods to reduce rotor speed, velocity compounding, pressure compounding and classification of steam turbines.
				CO5: Infer from property charts and tables and to apply the data for the evaluation of performance parameters of the steam condenser and gas turbine plants.
				CO6: Understand the principle operation, classification of jet propulsion and rockets.
32	III/II	ME604PC	Heat Transfer Lab	CO1: Perform steady state conduction experiments to estimate thermal conductivity of different materials.
				CO2: Perform transient heat conduction experiment.
				CO3: Estimate heat transfer coefficients in forced convection, free convection, condensation and correlate with theoretical values.
				CO4: Obtain variation of temperature along the length of the pin fin under forced and free convection.
				CO5: Perform radiation experiments: Determine surface emissivity of a test plate and Stefan- Boltzmann's constant and compare with theoretical value.
				CO6: Study of heat pipe and its demonstration.
33	III/II	ME605PC	CADD and MATLAB	CO1 : Find out the different between CAD and CAM
				CO2: Learn the modified and zoom commands under the given design conditions.
				CO3: Design different components of automobile.
				CO4: Test the part program in the CNC machine.
				CO5: Observe the group technology.
				CO6: Test the quality of SI /CI engines parts.
34	III/II	EN606HS	Advanced English Communication Skills Lab	CO1: Speak effectively.
				CO2: Express and communicate fluently and appropriately in social professional contexts.
				CO3: Develop the comprehensive ability through English language enables the students in understanding and assimilating other engineering subjects.
				CO4: The awareness of English lab enriches their communication and soft skills contributing to their overall development and success.
				CO5: Draft various letters and reports for all official



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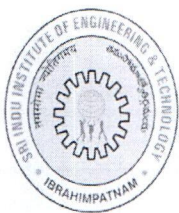
Recognized under 2(f) of UGC Act 1956.

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				purpose.
				<b>CO6:</b> Take part in social and professional communication.
35	IV/I	ME701PC	CAD/CAM	<p><b>CO1:</b> Development Of Part Drawings For Various Components In The Form Of Orthographic And Isometric. Representation Of Dimensioning And Tolerances.</p> <p><b>CO2:</b> Generation Of Various 3D Models Through Protrusion, Revolve, Sweep Creation Of Various Features Study Of Boolean Based Modeling And Assembly Modeling. Study Of Various Standard Translators. Design Of Simple Components, Differentiate Surfaces And Curves.</p> <p><b>CO3:</b> Apply G- Codes and M-Codes for various applications.</p> <p><b>CO4:</b> Able To Study Of Various Post Processors Used In NC Machines. Development Of NC Code For Free Form And Sculptured Surfaces Using CAM Software.</p> <p><b>CO5:</b> Able To Study Of Group Technology And Machining Operations Flexible Manufacturing.</p> <p><b>CO6:</b> Able To Study Of Computer Integrated Technology And Quality Of Control.</p>
36	IV/I	ME702PC	Instrumentation and Control System	<p><b>CO1:</b> The student will be able to understand knowledge of filed instrumentations.</p> <p><b>CO2:</b> The student will be able to understand the study of measurement of displacement, temperature, pressure measurements.</p> <p><b>CO3:</b> The student will be able to understand measurement of liquid level and flow, speed, acceleration, vibration measurement.</p> <p><b>CO4:</b> The student will be able to understand the application of strain gauges.</p> <p><b>CO5:</b> The student will be able to understand the measurement of humidity, force, torque and power.</p> <p><b>CO6:</b> The student will be able to understand the study of control systems in processes.</p>
37	IV/I	ME723PE	Power Plant Engineering	<p><b>CO1:</b> Able to Generalize the working of different power plant circuits and different handling systems.</p> <p><b>CO2:</b> Able to Describe different combustion process and water treatment methods.</p> <p><b>CO3:</b> Able to Distinguish construction and working of diesel power plant gas turbine power plant and solar energy conversion.</p> <p><b>CO4:</b> Able to Summarize hydroelectric power plant and</p>

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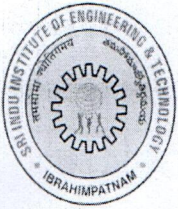
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				its characteristics.
				<b>CO5:</b> Able to Assess the working of nuclear power plant, different types of reactors, lifespan of an atom.
				<b>CO6:</b> Able to Analyze the power plant economics and environmental considerations.
38	IV/I	ME734PE	CNC Technology	<b>CO1 :</b> Describe various NC and CNC machines for various operations like milling, drilling, turning, grinding etc.
				<b>CO2 :</b> Describe various part models to write NC part programming on given part like taper turning, drilling, surface milling etc.
				<b>CO3 :</b> Describe various part models to write APT part programming on given part like taper turning, drilling, surface milling etc.
				<b>CO4:</b> Explain and summarize the principles and key characteristics of Adaptive control system, Adaptive control with optimization, Adaptive control with constraints and Direct Numerical Control system (DNC).
				<b>CO5:</b> Explain and summarize typical Microcontrollers & PLC's applications in mechanical industry.
39	IV/I	ME744PE	Additive Manufacturing Technology	<b>CO1:</b> Describe various CAD issues for 3D printing and rapid prototyping and related operations for STL model manipulation.
				<b>CO2:</b> Formulate and solve typical problems on reverse engineering for surface reconstruction from physical prototype models through digitizing and spline-based surface fitting.
				<b>CO3:</b> Formulate and solve typical problems on reverse engineering for surface reconstruction from digitized mesh models through topological modelling and subdivision surface fitting.
				<b>CO4:</b> Explain and summarize the principles and key characteristics of additive manufacturing technologies and commonly used 3D printing and additive manufacturing systems.
				<b>CO5:</b> Explain and summarize typical rapid tooling processes for quick batch production of plastic and metal parts.
40	IV/I	ME703PC	CAD/CAM Lab	<b>CO1:</b> Find out the difference between CAD and CAM .
				<b>CO2:</b> Learn the modified and zoom commands under the given design conditions.
				<b>CO3:</b> Design of different automobile components.
				<b>CO4:</b> Test the part program in the CNC machine.



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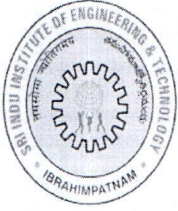
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				<b>CO5:</b> Observe the group technology.
				<b>CO6:</b> Test the quality of SI /CI engines parts.
41	IV/I	ME704PC	Instrumentation and Control Systems Lab	<b>CO1:</b> Understand knowledge of filed instrumentations.
				<b>CO2:</b> Understand the study of measurement of displacement, temperature, pressure measurements.
				<b>CO3:</b> Understand measurement of liquid level and flow, speed, acceleration, vibration measurement.
				<b>CO4:</b> Understand the application of strain gauges.
				<b>CO5:</b> Understand the measurement of humidity, force, torque and power.
				<b>CO6:</b> Understand the study of control systems in processes.
42	IV/I	ME705PC	Industry Oriented Mini project	<b>CO1:</b> Able to collaborate with others as they work on intellectual projects.
				<b>CO2:</b> Plan, analyze, design and implement using different tools.
				<b>CO3:</b> Learn to work as a team and to focus on getting a working project done within a stipulated period of time.
43	IV/I	ME706PC	Seminar	<b>CO1:</b> Learn public speaking skills by presentations.
				<b>CO2:</b> Understand new technologies in all engineering fields.
				<b>CO3:</b> Improve problem solving skills.
44	IV/II	CE833OE	Entrepreneurship & Small business Enterprises	<b>CO1:</b> Define Entrepreneurship, Types, and Competencies, Training methods, Motivations, Models and Process of Entrepreneurial Development.
				<b>CO2:</b> Create New Venture, with an effective business plan considering central and state level entrepreneur opportunities.
				<b>CO3:</b> Explains the management of MSMEs and sick enterprises. Its Symptoms, Process and Rehabilitation.
				<b>CO4:</b> Analyze different markets, cost and pricing, Branding and International trade.
				<b>CO5:</b> Explains the strategic perspectives in Entrepreneurship and Women Entrepreneurs.
45	IV/II	ME854PE	Production Planning & Control	<b>CO1:</b> Explain various Necessary concepts of production, planning and control aspects in manufacturing industry.
				<b>CO2:</b> Apply forecasting techniques like qualitative and quantitative methods to the production system.
				<b>CO3:</b> Compare the concepts of PPC, inventory & MRP, ERP, LOB system.
				<b>CO4:</b> Apply routing, scheduling techniques to the production control and management system.

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				<p><b>CO5:</b> Choose dispatching techniques to the production control and management system.</p> <p><b>CO6:</b> Apply the use of computers to design the Production planning and control system.</p>
46	IV/II	ME863PE	Unconventional Machining Processes	<p><b>CO1:</b> After completion of course, the, student shall understand the principle and working, various mechanism involved in metal removal process of Unconventional machining process.</p> <p><b>CO2:</b> Become compact to design and analyze problems of engineering relevant to manufacturing.</p> <p><b>CO3:</b> To categorize the various Unconventional machining processes on energy sources and mechanism employed.</p> <p><b>CO4:</b> To analyze the thermal and non thermal processes involved in Unconventional machining process.</p> <p><b>CO5:</b> To select the best suitable advanced machining process for processing of Unconventional materials employed in modern manufacturing industries.</p> <p><b>CO6:</b> Develop methods of working for minimizing the production cost.</p>
47	IV/II	ME801PC	Major Project	<p><b>CO1:</b> Apply fundamental concepts of areas of study to solve a problem.</p> <p><b>CO2:</b> Use effectively oral, written and visual communication.</p> <p><b>CO3:</b> Work with teams to meet the requirement and to reach the targets.</p>

  
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