DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAMME: B.E. MECHANICAL ENGINEERING

VISION

- To deliver high quality education that creates new opportunities for students to meet the challenges and in pursuit of excellence in Mechanical Engineering.

MISSION

- To provide a sound mechanical engineering education for a successful career.
- To facilitate team work and culture to improve the social standards of graduates.
- To strengthen the industry institute interaction.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- Effectuating success in careers by exploring with the design, digital and computational analysis of engineering systems, experimentation and testing, smart manufacturing, technical services, and research.
- Amalgamating effectively with stakeholders to update and improve their core competencies and abilities to ethically compete in the ever-changing multicultural global enterprise.
- To encourage multi-disciplinary research and development to foster advanced technology, and to nurture innovation and entrepreneurship in order to compete successfully in the global economy.
- To globally share and apply technical knowledge to create new opportunities that proactively advances our society through team efforts and to solve various challenging technical, environmental and societal problems.
- To create world class mechanical engineers capable of practice engineering ethically with a solid vision to become great leaders in academia, industries and society.

PROGRAM OUTCOMES (POs)

- Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Problem analysis: Identify, formulate, review research literature, and analyse complex engineering

problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- ❖ Apply the knowledge gained in Mechanical Engineering for design and development and manufacture of engineering systems.
- ❖ Apply the knowledge acquired to investigate research-oriented problems in mechanical engineering with due consideration for environmental and social impacts.
- ❖ Use the engineering analysis and data management tools for effective management of multidisciplinary projects.

COURSE OUTCOMES (COs)

COURSE OUTCOMES (COs)	
Regulation	2017
Semester	01
Course Code	HS8151
Course Name	Communicative English
Course Outcome	• Read articles of a general kind in magazines and newspapers. • Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English. • Comprehend conversations and short talks delivered in English. • Write short essays of a general kind and personal letters and emails in English.

Regulation	2017
Semester	01
Course Code	MA8151
Course Name	Engineering Mathematics – I
Course Outcome	• Use both the limit definition and rules of differentiation to differentiate functions. • Apply differentiation to solve maxima and minima problems. • Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus. • Apply integration to compute multiple integrals, area, volume, integrals in

	polar coordinates, in addition to change of order and change of variables. • Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts. • Determine convergence/divergence of improper integrals and evaluate convergent improper integrals. • Apply various techniques in solving differential equations.

Regulation	2017
Semester	01
Course Code	PH8151
Course Name	Engineering Physics
Course Outcome	• The students will gain knowledge on the basics of properties of matter and its applications. • The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics. • The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers. • The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes. • The students will understand the basics of crystals, their structures and different crystal growth techniques.

Regulation	2017
Semester	01
Course Code	CY8151
Course Name	Engineering Chemistry
Course Outcome	• The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

Regulation	2017
Semester	01
Course Code	GE8151
Course Name	Problem Solving and Python Programming
Course Outcome	• Develop algorithmic solutions to simple computational problems. • Read, write, execute by hand simple Python programs. • Structure simple Python programs for solving problems. • Decompose a Python program into functions. • Represent compound data using Python lists, tuples, dictionaries. • Read and write data from/to files in Python Programs.

Regulation	2017
Semester	01
Course Code	GE8152
Course Name	Engineering Graphics
Course Outcome	• Familiarize with the fundamentals and standards of Engineering graphics. • Perform freehand sketching of basic geometrical constructions and multiple views of objects. • Project orthographic projections of lines and plane surfaces. • Draw projections and solids and development of surfaces. • Visualize and to project isometric and perspective sections of simple solids.

Regulation	2017
Semester	01
Course Code	GE8161
Course Name	Problem Solving And Python Programming Laboratory
Course Outcome	• Write, test, and debug simple Python programs. • Implement Python programs with conditionals and loops. • Develop Python programs step-wise by defining functions and calling them. • Use Python lists, tuples, dictionaries for representing compound data.

	• Read and write data from/to files in Python.

Regulation	2017
Semester	01
Course Code	BS8161
Course Name	Physics And Chemistry Laboratory
Course Outcome	• Apply principles of elasticity, optics and thermal properties for engineering applications. • The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

Regulation	2017
Semester	02
Course Code	HS8251
Course Name	Technical English
Course Outcome	• Read technical texts and write area- specific texts effortlessly. • Listen and comprehend lectures and talks in their area of specialization successfully. • Speak appropriately and effectively in varied formal and informal contexts. • Write reports and winning job applications.

Regulation	2017
Semester	02
Course Code	MA8251
Course Name	Engineering Mathematics – II
Course Outcome	• Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices. • Gradient, divergence and curl of a vector point function and related identities. • Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification. • Analytic functions, conformal mapping and complex integration.

	• Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Regulation	2017
Semester	02
Course Code	PH8251
Course Name	Materials Science
Course Outcome	• The students will have knowledge on the various phase diagrams and their applications. • The students will acquire knowledge on fe-fe3c phase diagram, various microstructures and alloys. • The students will get knowledge on mechanical properties of materials and their measurement. • The students will gain knowledge on magnetic, dielectric and superconducting properties of materials. • The students will understand the basics of ceramics, composites and nanomaterials.

Regulation	2017
Semester	02
Course Code	BE8253
Course Name	Basic Electrical, Electronics and Instrumentation Engineering
Course Outcome	• Understand electric circuits and working principles of electrical machines. • Understand the concepts of various electronic devices. • Choose appropriate instruments for electrical measurement for a specific application.

Regulation	2017
Semester	02
Course Code	GE8291

Course Name	Environmental Science and Engineering
Course Outcome	• Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course. • Public awareness of environmental is at infant stage. • Ignorance and incomplete knowledge has lead to misconceptions. • Development and improvement in std. of living has lead to serious environmental disasters.

Regulation	2017
Semester	02
Course Code	GE8292
Course Name	Engineering Mechanics
Course Outcome	• Illustrate the vectorial and scalar representation of forces and moments. • Analyse the rigid body in equilibrium. • Evaluate the properties of surfaces and solids. • Calculate dynamic forces exerted in rigid body. • Determine the friction and the effects by the laws of friction.

Regulation	2017
Semester	02
Course Code	GE8261
Course Name	Engineering Practices Laboratory
Course Outcome	• Fabricate carpentry components and pipe connections including plumbing works. • Use welding equipments to join the structures. • Carry out the basic machining operations. • Make the models using sheet metal works. • Illustrate on centrifugal pump, air conditioner, operations of smithy, foundary and fittings. • Carry out basic home electrical works and appliances.

	• Measure the electrical quantities. • Elaborate on the components, gates, soldering practices.

Regulation	2017
Semester	02
Course Code	BE8261
Course Name	Basic Electrical, Electronics and Instrumentation Engineering Laboratory
Course Outcome	• Ability to determine the speed characteristic of different electrical machines. • Ability to design simple circuits involving diodes and transistors. • Ability to use operational amplifiers.

Regulation	2017
Semester	03
Course Code	ME8493
Course Name	Thermal Engineering - I
Course Outcome	• Apply thermodynamic concepts to different air standard cycles and solve problems. • Solve problems in single stage and multistage aircompressors. • Explain the functioning and features of IC engines, components and auxiliaries. • Calculate performance parameters of IC Engines. • Explain the flow in Gas turbines and solve problems.

Regulation	2017
Regulation	03
Semester	ME8391
Course Code	Engineering Thermodynamics

Course Name	• Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions. • Apply second law of thermodynamics to open and closed systems and calculate entropy and availability. • Apply Rankine cycle to steam power plant and compare few cycle improvement methods. • Derive simple thermodynamic relations of ideal and real gases. • Calculate the properties of gas mixtures and moist air and its use in psychometric Processes.

Regulation	2017
Semester	03
Course Code	CE8394
Course Name	Fluid Mechanics And Machinery
Course Outcome	• Apply mathematical knowledge to predict the properties and characteristics of a fluid. • Can analyse and calculate major and minor losses associated with pipe flow in piping networks. • Can mathematically predict the nature of physical quantities. • Can critically analyse the performance of pumps. • Can critically analyse the performance of turbines.

Regulation	2017
Semester	03
Course Code	ME8351
Course Name	Manufacturing Technology – I

Course Outcome	• Explain different metal casting processes, associated defects, merits and demerits. • Compare different metal joining processes. • Summarize various hot working and cold working methodsof metals. • Explain various sheet metal making processes. • Distinguish various methods of manufacturing plasticcomponents.

Regulation	2017
Semester	03
Course Code	EE8353
Course Name	Electrical Drives and Controls
Course Outcome	• Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance.

Regulation	2017
Semester	03
Course Code	ME8361
Course Name	Manufacturing Technology Laboratory – I
Course Outcome	• Demonstrate the safety precautions exercised in themechanical workshop. • Make the work piece as per given shape and size usingLathe. • Join two metals using arc welding. • Use sheet metal fabrication tools and make simple tray andfunnel. • Use different moulding tools, patterns and prepare sand moulds.

Regulation	2017
Semester	03
Course Code	ME8381

Course Name	Computer Aided Machine Drawing
Course Outcome	• Follow the drawing standards, Fits and Tolerances. • Re-create part drawings, sectional views and assembly drawings as per standards.

Regulation	2017
Semester	03
Course Code	EE8361
Course Name	Electrical Engineering Laboratory
Course Outcome	• Ability to perform speed characteristic of different electricalmachine.

Regulation	2017
Semester	03
Course Code	HS8381
Course Name	Interpersonal Skills / Listening &Speaking
Course Outcome	• Listen and respond appropriately. • Participate in group discussions. • Make effective presentations. • Participate confidently and appropriately in conversations both formal and informal.

Regulation	2017
Semester	04
Course Code	MA8452
Course Name	Statistics And Numerical Methods
Course Outcome	• Apply the concept of testing of hypothesis for small and large samples in real life problems.

	• Apply the basic concepts of classifications of design of experiments in the field of agriculture. • Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems. • Understand the knowledge of various techniques and methods for solving first and second order ordinarydifferential equations. • Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniqueswith engineering applications.

Regulation	2017
Semester	04
Course Code	ME8492
Course Name	Kinematics of Machinery
Course Outcome	• Discuss the basics of mechanism. • Calculate velocity and acceleration in simple mechanisms. • Develop CAM profiles. • Solve problems on gears and gear trains. • Examine friction in machine elements.

Regulation	2017
Semester	04
Course Code	ME8451
Course Name	Manufacturing Technology – II

Course Outcome	• Explain the mechanism of material removal processes. • Describe the constructional and operational features of centre lathe and other special purpose lathes. • Describe the constructional and operational features of shaper, planner, milling, drilling sawing and broaching machines. • Explain the types of grinding and other super finishing processes apart from gear manufacturing processes. • Summarize numerical control of machine tools and write a part program.

Regulation	2017
Semester	04
Course Code	ME8491
Course Name	Engineering Metallurgy
Course Outcome	• Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification. • Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes. • Clarify the effect of alloying elements on ferrous and non-ferrous metals. • Summarize the properties and applications of non metallic materials. Explain the testing of mechanical properties.

Regulation	2017
Semester	04
Course Code	CE8395
Course Name	Strength of Materials for Mechanical Engineers

Course Outcome	• Understand the concepts of stress and strain in simple and compound bars, the importance principal stresses and principal planes. • Understand the load transferring mechanism in beams and stress distribution due to shear in force and bending moment. • Apply basic equation of simple torsion in designing of shafts and helical spring. • Calculate the slope and deflection in beams using different methods. • Analyze and design thin and thick shells for the applied internal and external pressures.

Regulation	2017
Semester	04
Course Code	ME8493
Course Name	Thermal Engineering - I
Course Outcome	• Apply thermodynamic concepts to different air standard cycles and solve problems. • Solve problems in single stage and multistage aircompressors. • Explain the functioning and features of IC engines, components and auxiliaries. • Calculate performance parameters of IC Engines. • Explain the flow in Gas turbines and solve problems.

Regulation	2017
Semester	04
Course Code	ME8462
Course Name	Manufacturing Technology Laboratory – II

Course Outcome	• use different machine tools to manufacturing gears. • Ability to use different machine tools to manufacturinggears. • Ability to use different machine tools for finishingoperations. • Ability to manufacture tools using cutter grinder. • Develop CNC part programming.

Regulation	2017
Semester	04
Course Code	CE8381
Course Name	Strength of Materials and Fluid Mechanics and Machinery Laboratory
Course Outcome	• Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials. • Perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials. • Use the measurement equipments for flow measurement. • Perform test on different fluid machinery.

Regulation	2017
Semester	04
Course Code	HS8461
Course Name	Advanced Reading and Writing
Course Outcome	• Write different types of essays. • Write winning job applications. • Read and evaluate texts critically. • Display critical thinking in various professional contexts.

Regulation	2017
Semester	05

Course Code	ME8595
Course Name	Thermal Engineering – II
Course Outcome	• Solve problems in Steam Nozzle. • Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters. • Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems. • Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers. • Solve problems using refrigerant table / charts and psychrometric charts.

Regulation	2017
Semester	05
Course Code	ME8593
Course Name	Design of Machine Elements
Course Outcome	• Explain the influence of steady and variable stresses in machine component design. • Apply the concepts of design to shafts, keys and couplings. • Apply the concepts of design to temporary and permanentjoints. • Apply the concepts of design to energy absorbing members, connecting rod and crank shaft. • Apply the concepts of design to bearings.

Regulation	2017
Semester	05
Course Code	ME8501
Course Name	Metrology And Measurements

Course Outcome	• Describe the concepts of measurements to apply in various metrological instruments. • Outline the principles of linear and angular measurement tools used for industrial applications. • Explain the procedure for conducting computer aided inspection Demonstrate the techniques of form measurement used for industrial components. • Discuss various measuring techniques of mechanical properties in industrial applications.

Regulation	2017
Semester	05
Course Code	ME8594
Course Name	Dynamics of Machines
Course Outcome	• Calculate static and dynamic forces of mechanisms. • Calculate the balancing masses and their locations of reciprocating and rotating masses. • Compute the frequency of free vibration. • Compute the frequency of forced vibration and dampingcoefficient. • Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.

Regulation	2017
Semester	05
Course Code	ME8511
Course Name	Kinematics and Dynamics Laboratory

Course Outcome	• Explain gear parameters, kinematics of mechanisms, gyroscopic effect and working of lab equipments. • Determine mass moment of inertia of mechanical element, governor effort and range sensitivity, natural frequency and damping coefficient, torsional frequency, critical speeds of shafts, balancing mass of rotating and reciprocating masses, and transmissibility ratio.

Regulation	2017
Semester	05
Course Code	ME8512
Course Name	Thermal Engineering Laboratory
Course Outcome	• Conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials. • Conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient. • Conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity. • Conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor. • Conduct tests to evaluate the performance of refrigeration and air conditioning test rigs.

Regulation	2017
Semester	05
Course Code	ME8513
Course Name	Metrology and Measurements Laboratory

Course Outcome	• Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration. • Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection.

Regulation	2017	
Semester	05	Open Elective - I
Course Code	OPT551	
Course Name	Fibre Reinforced Plastics	
Course Outcome	• Select various materials for designing compositestructures. • Apply knowledge of fracture mechanics of composites during designing of composite structures. • Analyze critically the damping capacity of compositematerials. • Correlate various manufacturing/fabricating techniques for composite structures based on design.	

Regulation	2017
Semester	06
Course Code	ME8651
Course Name	Design of Transmission Systems
Course Outcome	• Apply the concepts of design to belts, chains and rope drives. • Apply the concepts of design to spur, helical gears. • Apply the concepts of design to worm and bevel gears. • Apply the concepts of design to gear boxes. • Apply the concepts of design to cams, brakes and clutches

Regulation	2017
Semester	06
Course Code	ME8691
Course Name	Computer Aided Design and Manufacturing
Course Outcome	• Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics. • Explain the fundamentals of parametric curves, surfaces and Solids Summarize the different types of Standard systems used in CAD. • Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines. • Summarize the different types of techniques used in Cellular Manufacturing and FMS.

Regulation	2017
Semester	06
Course Code	ME8693
Course Name	Heat and Mass Transfer
Course Outcome	• Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems. • Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems. • Explain the phenomena of boiling and condensation, apply LMTD and NTU methods of thermal analysis to different types of heat exchanger configurations and solve problems. • Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types ofsurfaces to solve problems. • Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications.

Regulation	2017
Semester	06
Course Code	ME8692
Course Name	Finite Element Analysis
Course Outcome	• Summarize the basics of finite element formulation. • Apply finite element formulations to solve one dimensionalProblems. • Apply finite element formulations to solve two dimensionalscalar Problems. • Apply finite element method to solve two dimensionalVector problems. • Apply finite element method to solve problems on ISO parametric element and dynamic Problems.

Regulation	2017
Semester	06
Course Code	ME8694
Course Name	Hydraulics and Pneumatics
Course Outcome	• Explain the Fluid power and operation of different types ofpumps. • Summarize the features and functions of Hydraulic motors,actuators and Flow control valves. • Explain the different types of Hydraulic circuits andsystems. • Explain the working of different pneumatic circuits andsystems. • Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.

Regulation	2017	
Semester	06	Professional Elective - I
Course Code	PR8592	
Course Name	Welding Technology	

Course Outcome	• Understand the construction and working principles of gas and arc welding process. • Understand the construction and working principles of resistance welding process. • Understand the construction and working principles of various solid state welding process. • Understand the construction and working principles of various special welding processes. • Understand the concepts on weld joint design, weldability and testing of weldments.

Regulation	2017
Semester	06
Course Code	ME8681
Course Name	CAD / CAM Laboratory
Course Outcome	• Draw 3D and Assembly drawing using CAD software. • CO2 Demonstrate manual part programming with G and Mcodes using CAM.

Regulation	2017
Semester	06
Course Code	ME8682
Course Name	Design and Fabrication Project
Course Outcome	• Design and fabricate the machine element or the mechanical product. • Demonstrate the working model of the machine element or the mechanical product.

Regulation	2017

Semester	06
Course Code	HS8581
Course Name	Professional Communication
Course Outcome	• Make effective presentations. • Participate confidently in Group Discussions. • Attend job interviews and be successful in them. • Develop adequate Soft Skills required for the workplace.

Regulation	2017
Semester	07
Course Code	ME8792
Course Name	Power Plant Engineering
Course Outcome	• Explain the layout, construction and working of the components inside a thermal power plant. • Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle powerplants. • Explain the layout, construction and working of the components inside nuclear power plants. • Explain the layout, construction and working of the components inside Renewable energy power plants. • Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

Regulation	2017
Semester	07
Course Code	ME8793

Course Name	Process Planning and Cost Estimation
Course Outcome	• Select the process, equipment and tools for variousindustrial products. • Prepare process planning activity chart. • Explain the concept of cost estimation. • Compute the job order cost for different type of shop floor. • Calculate the machining time for various machiningoperations.

Regulation	2017
Semester	07
Course Code	ME8791
Course Name	Mechatronics
Course Outcome	• Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology. • Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller. • Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various device interfacing. • Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronics engineering. • Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and also from the given case studies.

Regulation	2017	
Semester	07	Open Elective - II
Course Code	OML751	
Course Name	Testing of Materials	

Course Outcome	• Identify suitable testing technique to inspect industrialcomponent. • Ability to use the different technique and know its applications and limitations.

Regulation	2017	
Semester	07	Professional Elective – II
Course Code	MF8071	
Course Name	Additive Manufacturing	
Course Outcome	• On completion of this course, students will learn about a working principle and construction of Additive Manufacturing technologies, their potential to support design and manufacturing, modern development in additive manufacturing process and case studies relevant to mass customized manufacturing.	

Regulation	2017	
Semester	07	Professional Elective – III
Course Code	ME8097	
Course Name	Non Destructive Testing and Evaluation	
Course Outcome	• Explain the fundamental concepts of NDT. • Discuss the different methods of NDE. • Explain the concept of Thermography and Eddy currenttesting. • Explain the concept of Ultrasonic Testing and Acoustic Emission. • Explain the concept of Radiography.	

Regulation	2017
Semester	07
Course Code	ME8711

Course Name	Simulation and Analysis Laboratory
Course Outcome	• Simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using MATLAB. • Analyze the stresses and strains induced in plates, brackets and beams and heat transfer problems. • Calculate the natural frequency and mode shape analysis of 2D components and beams.

Regulation	2017
Semester	07
Course Code	ME8781
Course Name	Mechatronics Laboratory
Course Outcome	• Demonstrate the functioning of Mechatronics system with various pneumatic, hydraulic and electrical systems. • Demonstrate the functioning of control systems with the help of PLC and microcontrollers.

Regulation	2017
Semester	08
Course Code	MG8591
Course Name	Principles of Management
Course Outcome	• Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspectofmanagement.

Regulation	2017	
Semester	08	Professional Elective – III
Course Code	IE8693	
Course Name	Production Planning and Control	
Course Outcome	• Upon completion of this course, the students can able to prepare production planning and control activities such as work study, product planning, production scheduling, Inventory Control. • They can plan manufacturing requirements manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP).	

Regulation	2017
Semester	08
Course Code	ME8811
Course Name	Project Work
Course Outcome	• On Completion of the project work students will be in a position totake up any challenging practical problems and find solution by formulating proper methodology.