Course Outcomes (CO)

(R 2013)

Branch: B.E, Mechatronics Engineering

Course Code: C101 Course Name:HS6151 Technical English – I

C101.1	Speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
C101.2	Write cohesively and coherently and flawlessly avoiding grammatical errors
C101.3	Using a wide vocabulary range, organizing their ideas logically on a topic.
C101.4	Read different genres of texts adopting various reading strategies.
C101.5	Listen/view and comprehend different spoken discourses/excerpts in different accents.

Course Code: C102 Course Name: MA6151 Mathematics – I

C102.1	Develop the use of matrix algebra techniques this is needed by engineers for practical applications
C102.2	Make the student knowledgeable in the area of infinite series and their convergence so that he/ she will be familiar with limitations of using infinite series approximations for solutions arising in mathematical modeling
C102.3	Familiarize the student with functions of several variables. This is needed in many branches of engineering
C102.4	Introduce the concepts of improper integrals, Gamma, Beta and Error functions which are needed in engineering applications
C102.5	Acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage

Course Code:C103 Course Name: PH6151 Engineering Physics – I

C103.1	Apply knowledge on the basis of physics related to properties of matter
C103.2	Apply knowledge on the basis of physics related to optics
C103.3	Apply knowledge related to acoustics
C103.4	Apply these fundamental principles to solve practical problems
C103.5	The materials are used for engineering applications

Course Code: C104 Course Name:CY 6151 Engineering Chemistry – I

C104.1	Make the students conversant with basics of polymer chemistry
C104.2	To make the student acquire sound knowledge of second law of thermodynamics and second law based derivations of importance in engineering applications in all disciplines
C104.3	Acquaint the student with concepts of important photophysical and photochemical processes and spectroscopy
C104.4	Develop an understanding of the basic concepts of phase rule and its applications to single and two component systems and appreciate the purpose and significance of alloys
C104.5	Acquaint the students with the basics of nano materials, their properties and applications

Course Code: C105 Course Name:GE6151 Computer Programming

C105.1	Learn the organization of a digital computer
C105.2	Be exposed to the number systems
C105.3	Learn to think logically and write pseudo code or draw flow charts for problems
C105.4	Be exposed to the syntax of C
C105.5	Be familiar with programming in C, Learn to use arrays, strings, functions, pointers, structures and unions in C

Course Code: C106 Course Name: GE6152 Engineering Graphics

C106.1	perform free hand sketching of basic geometrical constructions and multiple views of objects
C106.2	do orthographic projection of lines and plane surfaces
C106.3	draw projections and solids and development of surfaces
C106.4	prepare isometric and perspective sections of simple solids
C106.5	demonstrate computer aided drafting

Course Code: C107 Course Name:GE6161 Computer Practices Laboratory

C107.1	Introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics and properties of matter

C107.2	Get the practical skills in the field of thermal physics
C107.3	Acquire the industrial knowledge in the field of properties of matter
C107.4	Acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
C107.5	acquaint the students with the determination of molecular weight of a polymer by viscometry

Course Code:C108 Course Name: GE6162 Engineering Practices Laboratory

C108.1	To provide exposure to the students with hands on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering
C108.2	Study of plumbing and carpentry components of residential and industrial buildings. Safety aspe
C108.3	Ability to fabricate carpentry components and pipe connections including plumbing works
C108.4	Ability to use welding equipments to join the structures
C108.5	Ability to fabricate electrical and electronics circuit

Course Code:C109 Course Name:GE6163 Physics and Chemistry Laboratory - I

C109.1	To introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics and properties of matter
C109.2	To get the practical skills in the field of thermal physics
C109.3	To acquire the industrial knowledge in the field of properties of matter
C109.4	To make the student to acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
C109.5	To acquaint the students with the determination of molecular weight of a polymer by viscometry

C110.1	Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation.
C110.2	Write effectively and persuasively and produce different types of writing such as narration, description, exposition and argument as well as creative, critical, analytical and evaluative writing.
C110.3	Listen/view and comprehend different spoken excerpts critically and infer unspoken and implied meanings.
C110.4	Speak convincingly, express their opinions clearly.
C110.5	Initiate a discussion, negotiate, argue using appropriate communicative strategies.

Course Code:C111 Course Name:MA6251 Mathematics – II

C111.1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
C111.2	Gradient, divergence and curl of a vector point function and related identities.
C111.3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
C111.4	Analytic functions, conformal mapping and complex integration.
C111.5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

Course Code:C112 Course Name:PH6251 Engineering Physics – II

C112.1	Electric conduction, electrical conductivity, carrier concentration of metals.
C112.2	Semiconductors, carrier concentration of semiconductors, Hall effect and semiconductor devices.
C112.3	Types of magnetic materials, ferro magnetic materials, magnetic storage devices, Super conductors and their properties and applications.
C112.4	Dielectrics, properties and its applications, ferro electricity.
C112.5	Modern engineering materials, Nano materials and Carbon nano tubes.

Course Code:C113 Course Name:CY6251 Engineering Chemistry – II

C113.1	To make the students conversant with boiler feed water requirements, related problem and water treatment techniques.
C113.2	Principles of electrochemical reactions, redox reactions in corrosion of materials and methods for corrosion prevention and protection of materials.
C113.3	Principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells.
C113.4	Preparation, properties and applications of engineering materials.
C113.5	Types of fuels, calorific value calculations, manufacture of solid, liquid and gaseous fuels.

Course Code:C114 Course Name:GE6252 Basic Electrical and Electronics Engineering

C114.1	Ability to understand basic theorems used in Electrical circuits and the different components
C114.2	Ability to explain about the function and characteristics of electrical machines.
C114.3	Ability to explain about the fundamentals of semiconductor and applications.
C114.4	Ability to explain about the principles of digital electronics.
C114.5	Ability to explain about the knowledge of communication.

Course Code: C115 Course Name: GE6253 Engineering Mechanics

C115.1	Ability to illustrate the vectorial and scalar representation of forces and moments
C115.2	Ability to analyse the rigid body in equilibrium
C115.3	Ability to evaluate the properties of surfaces and solids
C115.4	Ability to calculate dynamic forces exerted in rigid body
C115.5	Ability to determine the friction and the effects by the laws of friction

Course Code: C116 Course Name:GE6261Computer Aided Drafting and Modeling Laboratory

C116.1	Sketch simple figures with title block using AutoCAD software commands.
C116.2	Sketch curves like parabola, spiral and involute of square & circle and draw the orthographic projection of simple solids.
C116.3	Prepare orthographic projection of simple machine parts and draw a plan of residential building.
C116.4	Sketch simple steel truss and sectional views of simple solids.
C116.5	Prepare 2D multi view drawing from 3D model.

Course Code:C117 Course Name:GE6262 Physics and Chemistry Laboratory -II

C117.1	To provide the basic practical exposure to all the engineering and technological streams in the field of physics. .
C117.2	To provide the basic practical exposure to all the engineering and technological streams in the field of chemistry.
C117.3	The students are able to know about the water containing impurities and some physical parameters.
C117.4	To gain the knowledge about properties of matter, semiconductors and solar cells
C117.5	To develop the knowledge of spectrophotometry.

Course Code:C201 Course Name:MA6351 Transforms and Partial Differential Equations

C201.1	Understand how to solve the given standard partial differential equations.
C201.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
C201.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
C201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Course Code: C202 Course Name:CE6306 Strength of Materials

C202.1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes
C202.2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment
C202.3	Apply basic equation of simple torsion in designing of shafts and helical spring
C202.4	Calculate the slope and deflection in beams using different methods.
C202.5	Analyze and design thin and thick shells for the applied internal and external pressures

Course Code: C203 Course Name:CE6451 Fluid Mechanics and Machinery

C203.1	To understand the basics concepts of fluid properties and their applications.
C203.2	To gain the fundamental knowledge on fluid flow through pipes of various section and its losses and boundary layer concept.
C203.3	To formulate equations for model and prototype for various applications and analysing it dimensionally.
C203.4	To understand the working principle of various pumps and its performance evaluation and comparison.
C203.5	To understand the working principle of various turbine and its performance evaluation and comparison.

Course Code: C204 Course Name:EC6302 Digital Electronics

C204.1	Use digital electronics in the present contemporary world and Analyze different methods used for simplification of Boolean expressions.
C204.2	Design and implement Combinational circuits using logic gates
C204.3	Use the semiconductor memories and related technology to design logic gates
C204.4	Design and implement synchronous and asynchronous sequential circuits.
C204.5	Write simple HDL codes for the circuits.

Course Code: C205 Course Name:EE6358 Electrical Drives and Machines

C205.1	Explain the structure of the basic electronic device
C205.2	Design applications using the basic electronic devices
C205.3	Understand the amplifiers and multistage amplifiers
C205.4	Understand the characteristics of transistors and p n junction
C205.5	Understand the p n junction

Course Code: C206 Course Name:ME6401 Kinematics of Machinery

C206.1	To apply fundamentals of mechanism for the design of new mechanisms
C206.2	To analyze the velocity and acceleration at any point in a link of mechanisms for optimum design
C206.3	To understand the kinematics and design of cam and follower mechanism.
C206.4	To gain the knowledge on kinematics of gears and its applications in gear trains.
C206.5	To apply the effect of friction in belt drives, rope drives, brakes, clutches, screw jacks and bearings.

Course Code: C207 Course Name:CE6461 Fluid Mechanics and Machinery Laboratory

C207.1	Calibrate flow measuring devices used in pipes.
C207.2	Determine the minor losses in pipes.
C207.3	Verification of fluid properties and Energy Principles.
C207.4	Study the performance of different types of hydraulic turbines.
C207.5	Study the performance of different types of pumps.

Course Code: C208 Course Name:EE6365 Electrical Engineering Laboratory

C208.1	To provide practical experience with simulation of electrical circuits and verifying circuit theorems
C208.2	Experimental verification of Kirchhoff's voltage and current laws
C208.3	Design and Simulation of series and parallel resonance circuit
C208.4	Experimental determination of power in three phase circuits by two-watt meter method, Calibration of single phase energy meter
C208.5	Ability to understand and apply circuit theorems and concepts in engineering applications

Course Code: C209 Course Name:MT6311Computer Aidded Machine Drawning Laboratory

C209.1	This study helps the students to handle the most basic software in design era to create drawings which plays the vital role in all aspects using various commands.
C209.2	Ability to draw the title block to access the drawing sheet quickly and also navigate through the description of the drawing easily for future reference. Ability to draw the ellipse of various foci and involute curve as per the applications.
C209.3	Ability to draw an object to decipher the front, top view and side view of the object diagrammatically by projecting it orthogonally.
C209.4	Ability to draw the plan of residential building and simple steel structures with the different types of joints as per the design calculations.
C209.5	Ability to draw the sectional and isometric view of various objects in different dimension.

Course Code: C210 Course Name:MA6452 Statistics and Numerical Methods

C211.1	Students will gain the knowledge on Large Samples and Samples. These concepts are very useful in biological, economical and social experiments and all kinds of generalizations based on information about a smaller sample and larger samples. Apply the appropriate test in the problems related with sampling.
C211.2	ANOVA statistical significance result is independent of constant bias and scaling errors as well as the units used in expressing observations. In the era of mechanical calculation it was common to subtract a constant from all observations (when equivalent to dropping leading digits) to simplify data entry.
C211.3	Students will learn on nonlinear (algebraic or transcendental) equations and linear equations. Students learn to solve the Eigen value problem of a matrix numerically when analytical methods tend to fail to give solution and apply all these in their field like Vibrating systems, fluid dynamics.
C211.4	Students will learn to construct approximate polynomials that can be used in data representation using interpolation techniques to find the intermediate values. In particular, interpolation methods are extensively applied in the models of the different phenomena where experimental data must be used in computer studies where expressions of those data are required. The learners are introduced to numerical differentiation and integration techniques. The techniques are useful when the function in the analytical form is complicated
C211.5	Get an insight on ordinary differential equations which will be useful in solving engineering problems. Students learn about the different methods for solving first order and second order differential equations. It will be useful in attempting any engineering problems. ODE is applied in specific mathematical fields like geometry, analytical mechanics, celestial mechanics and weather modelling

Course Code: C211 Course Name:ME6505 Dynamics of Machines

C212.1	Calculate static and dynamic forces of mechanisms.
C212.2	Calculate the balancing masses and their locations of reciprocating and rotating masses.
C212.3	Compute the frequency of free vibration.
C212.4	Compute the frequency of forced vibration and damping coefficient.
C212.5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.

Course Code: C212 Course Name:EC6405 Control System Engineering

C213.1	Understand the basic concepts of control systems, pole, zero and can analyze system stability on that basis.
C213.2	Develop electrical models/ mechanical models to design a physical system for a specific operation
C213.3	Understand and implement mathematical tools (such as SFG) to analyze a complete system

C213.4	Understand and implement mathematical tools (such as SFG) to analyze a complete system
C213.5	Analyze system's absolute, relative, local stability using different frequency domain methods.

Course Code: C213 Course Name:ME6402 Manufacturing Technology

C214.1	To understand the basic concepts of metal cutting, different types of machine tools, tool materials, single point cutting tool geometry and cutting fluids used in manufacturing.
C214.2	To understand the working principle of types of turning machine and its operations along with power and machining time estimation.
C214.3	To understand working principles and applications of shaping, drilling, boring, milling and gear generating machines.
C214.4	To enrich the knowledge of abrasive process, types of grinding and broaching machines.
C214.5	Ability to understand the evolution, types, features and gaining the CNC programming knowledge, and micro machining.

Course Code: C214 Course Name:ME6504 Metrology and Measurements

C215.1	To understand the basics of metrology its relationship with the working Environment and its effects on measurements.
C215.2	To understand the various devices used and principle behind linear and angular measurement.
C215.3	To understand the usuage of laser interferometers and Coordinate measuring machine.
C215.4	To understand the various devices used and principle behind form measurements.
C215.5	To Understand the the various devices used and principle behind measurement of power , Flow and Temperature.

Course Code: C216 Course Name:MT6401Microprocessor and Application

C216.1	Understand the architecture of 8085, 8086 and 8051
C216.2	Impart the knowledge about the instruction set.
C216.3	Understand the basic idea about the data transfer schemes and its applications.
C216.4	Develop skill in simple program writing for 8051, 8086 & 8085 and applications
C216.5	To know the Architecture and programming of 8086 Microprocessor

Course Code: C217 Course Name:MT6411 Microprocessor Laboratory

C217.1	Design and implement programs on 8085 microprocessor.
C217.2	Design and implement programs on 8086 microprocessor
C217.3	Design interfacing circuits with 8085
C217.4	Design interfacing circuits with 8086
C217.5	Design and implement 8051 microcontroller based systems

Course Code: C218 Course Name:ME6465 Manufacturing Technology Laboratory

C218.1	Ability to use different machine tools to create complicated channels and Develop CNC part programming
C218.2	Ability to use different machine tools to manufacturing gears.
C218.3	Ability to use different machine tools for finishing operations
C218.4	Ability to measure various cutting forces on a cutting tool
C218.5	Ability to manufacture tools using cutter grinder

Course Code: C219 Course Name:ME6511 Dynamics Laboratory

C219.1	Ability to demonstrate the principles of kinematics of machinery.
C219.2	Ability to demonstrate the principles of dynamics of machinery.
C219.3	Ability to use the measuring devices for dynamic testing.
C219.4	Ability to study the parameters of kinematics of machinery.
C219.5	Ability to study the parameters of dynamics of machinery.

Course Code: C301 Course Name:ME6503 Design of Machine Elements

C301.1	To understand and analyze stresses and strains in machine elements.
C301.2	To analyze and design the components for power transmission.
C301.3	To analyze the various stress developed in temporary and permanent joints.
C301.4	To design the energy storing elements, like springs & flywheel.
C301.5	To design and implement the various types of standard bearings.

Course Code: C302 Course Name:EE 6503 Power Electronics

C302.1	Understand the principle of electrical drives & be able to understand the dynamics of electrical drive systems.

C302.2	Select a drive for a particular application based on power rating & to select a drive based on mechanical characteristics for a particular drive application
C302.3	Operate and maintain solid state drives for speed control of DC machines
C302.4	Operate and maintain solid state drive for speed control of various special electrical machines.
C302.5	Understand various starting and braking methods on electrical drives including their effects on power supply, motor and load.

Course Code: C303 Course Name:MT6501 Sensors and Signal Processing

C303.1	To understand the basics of sensors.
C303.2	To obtain knowledge about mechanical measurements.
C303.3	To obtain knowledge about eletrical measurements.
C303.4	To understand the basics of smart sensors.
C303.5	To understand the basics of signal processing and data acquisition.

Course Code: C304 Course Name:GE6351 Environmental Science and Engineering

C304.1	To obtain knowledge about environment, ecosystems and biodiversity.
C304.2	To take control measures of environmental pollution.
C304.3	To gain knowledge about natural resources and energy sources.
C304.4	To find and implement scientific, technological, economic and political solutions to environmental problems.
C304.5	To understand the impact of environment on human population.

Course Code: C305 Course Name:MF6505 CNC Machine Technology

C305.1	Able to understand the principles and classification of CNC machine tools.
C305.2	Able to understand the constructional features of CNC machine tools.
C305.3	Able to understand the various drives and controls in CNC machines.
C305.4	Able to write CNC program for the work.
C305.5	Able to understand the various tooling and work holding devices in CNC machines.

Course Code: C306 Course Name:MT6502 Thermodynamics Principles and Applications

C306.1	The students will able to understand the concept of thermodynamics properties and First law thermodynamics apply to Flow process & Non-Flow process
C306.2	The students will able to acquire the concept of Second law thermodynamics and apply to Heat Engine, Refrigerator & Heat Pump
C306.3	The students can implement the knowledge of thermodynamics laws into the field of IC Engine & its Characteristics analysis
C306.4	The students can implement the knowledge into the field of air conditioning and refrigeration equipments & its Performance analysis
C306.5	The students will able to study the various modes of Heat transfer

Course Code: C307 Course Name:MT6711 Power Electronics LAB

C307.1	Ability to use SCR, MOSFET, TRIAC in electronic circuit
C307.2	Ability to perform characteristic study on the electronics components
C307.3	Ability to perform performance study on half controlled & fully controller converters
C307.4	Ability to perform performance study of three phase AC regulator
C307.5	Ability to perform performance study on speed control of DC shunt motor using three phase fully controlled converter.

Course Code: C308 Course Name:MT6512 Sensors and Signal Processing Lab

C308.1	Ability to use the sensors for measuring temperature using thermocouple, thermistor and RTD .
C308.2	Ability to use the sensors for measuring displacement using POT, LVDT & Capacitive transducer.
C038.3	To perform Servomotor position control using photo electric pickup
C308.4	Study on the application of data acquisition system for industrial purposes.
C308.5	Ability to use the sensors for the measurement of different signals and use of signal processing techniques to convert them to useful signal

Course Code: C309 Course Name:MT6513 CNC Lab

C309.1	Ability to write manual part programming using G code and M code for CNC Lathe.
C309.2	Ability to write manual part programming using G code and M code for CNC Mill.
C309.3	Ability to simulate the manual part programming using software.
C309.4	Ability to operate CNC controlled lathe machine.
C309.5	Ability to operate CNC controlled milling machine

Course Code: C310 Course Name:MG6851 PRINCIPLES OF MANAGEMENT

C311.1	Understand the definition of management, evolution of management, types of business organization and role of managers in a business entity.
C311.2	Know and understand the planning strategy, setting an objective oriented planning, tools and techniques applied for planning and decision
C311.3	Understand the organization structure, roles, delegation of authority. Understand the human resource planning, recruitment process, training and development.
C311.4	Understand the importance of directing workforce, motivation to employees, job enrichment, essentials of communication between entities of business.
C311.5	Understand and generate budget controls, productivity improvement and control framework for achieving the above objectives.

Course Code: C311 Course Name:MT 6601 Micro Controller and PLC

C312.1	Able to learn the theory and structure of 8051 microcontroller
C312.2	Able to write an ALP for 8051 microcontroller.
C312.3	Able to apply the knowledge of microcontroller and design a real time applications
C312.4	Able to understand the structure and programming of PLC
C312.5	Able to design and implement a system using PLC

Course Code: C312 Course Name:MT6602 Applied Hydraulics and Pneumatics

C313.1	Able to learn about fluid power principles.
C313.2	Able to learn about hydraulic actuators and valves.
C313.3	Able to design hydraulic systems using different hydraulic components.
C313.4	Able to design pneumatics systems using different pneumatics components.
C313.5	Able to operate and maintain various pneumatic and hydraulic systems in industrial environments

Course Code: C313 Course Name:MT6603 Design of Mechatronics System

C314.1	Understand the basics of mechatronics systems.
C314.2	Able to learn about real timr interfacing methods.
C314.3	Able to learn about micro mechatronics sytem.
C314.4	Able to learn about system modelling.
C314.5	Able to design systems in mechatronics approach using modern software packages.

Course Code: C314 Course Name:MT6604 Object Oriented Programe C++

C315.1	Express software design with UML diagrams
C315.2	Design software applications using OO concepts.
C315.3	Identify various scenarios based on software requirements
C315.4	Transform UML based software design into pattern based design using design patterns
C315.5	Understand the various testing methodologies for OO software

Course Code: C315 Course Name:IE6011 Product Design and Development

C316.1	Able to design some products for the given set of applications
C316.2	Able to learn about concept generation and selection.
C316.3	Able to learn about product architeture.
C316.4	Able to learn about industrial design.
C316.5	Able to make a prototype of a problem and hence product design and development can be achieved

Course Code: C316 Course Name:MT6611 Micro Controller and PLC Laboratory

C317.1	Ability to use microcontroller to perform various arithmetic and logic
C317.2	Ability to use microcontroller to control different types of motor.
C317.3	Ability to use PLC to control hydraulic and pneumatic circuits
C317.4	Ability to use PLC to design real time applications.
C317.5	Ability to use PLC to control equipment with timing and relays

Course Code: C317 Course Name:MT6612 Object Oriented Programe C++ Laboratory

C318.1	Gain the basic knowledge on Object Oriented concepts.
C318.2	Ability to develop applications using Object Oriented Programming Concepts.
C318.3	Ability to implement features of object oriented programming to solve real world problems
C318.4	Ability to develop applications using run time polymorphism
C318.5	Ability to develop applications using file handling

Course Code: C318 Course Name:MT6613 Applied Hydraulics and Pneumatics Laboratory

C319.1	Ability to design and test hydraulic circuits.
C319.2	Ability to design and test pneumatics circuits.
C319.3	Use of MATLAB/LABVIEW software for simulation of hydraulic circuits.
C319.4	Use of MATLAB/LABVIEW software for simulation of pneumatic circuits
C319.5	Use of MATLAB/LABVIEW software for simulation of eletrical circuits.

Course Code: C401 Course Name:MT6701 Medical Mechatronics

C401.1	Able to learn the basics of medical mechatronics.
C401.2	To study the principle of transducers for bio medical instrumentation.
C401.3	Able to learn the basics of signal conditioning and display.
C401.4	Able to learn the basics of medical support by mechatronics.
C401.5	Able to design , use and maintain various medical equipments

Course Code: C402 Course Name:MT6702 Modelling and Simulation

C402.1	Able to learn the basics of system and system environment.
C402.2	Able to learn the basics of random number generation.
C402.3	Able to learn the basics of randon- variate neneration.
C402.4	Able to learn about analysis of data.
C402.5	Able to learn the basics of system identification.

Course Code: C403 Course Name:MT6703 Robotics Mission & Vission System

C403.1	To understand the functions of the basic components of a Robot.
C403.2	To study the use of various types of End of Effectors
C403.3	To understand the working of sensors and machine vision system
C403.4	To impart knowledge in Robot Kinematics and Programming
C403.5	To learn Robot safety issues and economics.

Course Code: C404 Course Name:ME6602 AUTOMOBILE ENGINEERING

C404.1	Understand the various vehicle structure and Components of IC engine.
C404.2	Gain Knowledge in various auxiliary systems used in an automobile.
C404.3	Understand the principle and application of Transmission systems in an automobile.
C404.4	Demonstrate the use of steering, braking and suspension systems in an automobile
C404.5	Apply the advantages of various alternative energy sources.

Course Code: C405 Course Name:MT6002 Diagnostics Techniques

C405.1	The students will be able to analyze the defects and rectify the faults.
C405.2	The students to understand the he different maintenance categories like Preventive maintenance, condition based maintenance strategy and repair of machine elements.
C405.3	The students to understand the principles, functions and systems adapted in industry for the successful management of maintenance activities.
C405.4	The students can able to acquire knowledge of various maintenance softwares and strategies used in industry.
C405.5	The students will be able to learn the simple instruments used for condition monitoring in industry.

Course Code: C406 Course Name:EE 6007 Micro Electro Mechanical System

C406.1	Ability to understand the knowledge of semiconductors and solid mechanics to fabricate MEMS devices.
C406.2	To understand the rudiments of Micro fabrication techniques.
C406.3	Able to learn about the various sensors and actuator.
C406.4	Able to learn about the different materials used for MEMS .
C406.5	Ability to understand the applications of MEMS to disciplines beyond Electrical and Mechanical engineering.

Course Code: C407 Course Name:ME6611 CAD/CAM LABORATORY

C407.1	Ability to Develop 2D Part Models using Modeling Software.
C407.2	Ability to Develop 3D Part Models using Modeling Software.
C407.3	Ability to Assemble 3D Models using Modeling Software.
C407.4	Ability to Understand the CNC Control in Modern Manufacturing System.

C407.5	**Ability to Prepare CNC Part Programming and Perform Manufacturing.**

Course Code: C408 Course Name:MT6712 Robotics Laboratory

C408.1	**Able to learn different types of robotics and demonstrate them to identify differnt parts and components.**
C408.2	**Use of Adam's software and MAT Lab software to model the different types of robots**
C408.3	**Use of Adam's software and MAT Lab software to calculate work volume for different robots.**
C408.4	**Able to learn the components of robots with drive system and end effectors.**
C408.5	**Able to write different robot programmings.**

Course Code: C409 Course Name:ME6612 Design and Fabrication Project

C409.1	**Identify a topic in advanced areas of Mechanical Engineering**
C409.2	**Identify methods and materials to carry out experiments/develop code**
C409.3	**Review literature to identify gaps and define objectives & scope of the work**
C409.4	**Reorganize the procedures with a concern for society, environment and ethics**
C409.5	**Generate and implement innovative ideas for social benefit**

Course Code: C410 Course Name:GE6075 Professional Ethics in Engineering

C410.1	**To understand the importance of human values and practicing yoga's for stressManagement.**
C410.2	**To learn different theories of ethics and can apply ethical principles in society**
C410.3	**To experiment the ethical issues and codes related to engineering**
C410.4	**To realize the safety, responsibilities and several rights in the society**
C410.5	**To understand the impact of several global issues and human Social Responsibilities to eliminate the impacts.**

Course Code: C411 Course Name:MT6811 Project work

C411.1	**Identify a topic in advanced areas of Mechanical Engineering** **Identify methods and materials to carry out experiments/develop code**
C411.2	**Review literature to identify gaps and define objectives & scope of the work** **Reorganize the procedures with a concern for society, environment and ethics**
C411.3	**Generate and implement innovative ideas for social benefit** **Analyze and discuss the results to draw valid conclusions**
C411.4	**Develop a prototypes/models, experimental set-up and software systems necessary to meet the objectives** **Prepare a report as per recommended format and defend the work**
C411.5	**Explore the possibility of publishing papers in peer reviewed journals/conference proceedings**