



SREE VENKATESWARA COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi and Affiliated to JNTU, Anantapur)

Northrajupalem (Vi), Kodavaluru(M), S.P.S.R Nellore (Dt)-524316

COURSE OUTCOMES

I/I			
Functional English	C111	C111.1	Describe the communication and writing skills in general communication. (BL-2)
		C111.2	Develop the writing and life skills in structural manner of real time scenarios. (BL-3)
		C111.3	Apply the knowledge of writing and speaking skills to enhance the career opportunities. (BL-3)
		C111.4	Illustrate the concepts of writing and speaking skills to develop the skills in job opportunities.(BL - 2)
		C111.5	Analyze the concepts of various real time scenarios to represent in an effective model. (BL - 4)
Mathematics - I	C112	C112.1	Analyze the ordinary differential equations to provide solutions of various engineering applications.(BL-4)
		C112.2	Apply the mathematical knowledge of higher order differential equations to solve various engineering problems.(BL-3)

		C112.3	Describe the knowledge of Mean Value theorems, functions of several variables and Radius of Curvature for engineering applications.(BL-2)
		C112.4	Evaluate the Multiple integrals to determine areas and volumes of engineering applications. (BL-5)
		C112.5	Apply the techniques of vector calculus to solve various engineering problems.(BL-3)
Computer Programming	C113	C113.1	Describe computer programming concepts to solve a problem. (BL -2)
		C113.2	Choose appropriate control structure to solve the real world problems.(BL-3)
		C113.3	Apply the knowledge of pointers for dynamic memory management of an application.(BL-3)
		C113.4	Apply the concepts of Arrays, pointers and structures to develop programs.(BL-3)
		C113.5	Demonstrate the knowledge of Files to organize the data in a disk.(BL- 2)
Engineering Chemistry	C114	C114.1	Describe the various water treatment techniques used for the softening and purification of water in industrial applications.(BL-2)
		C114.2	Demonstrate the various preparation mechanisms of different polymers in engineering applications.(BL-2)
		C114.3	Apply the concepts of electro chemistry and knowledge of protection of metals in engineering and scientific applications.(BL-3)
		C114.4	Analyze the fuels and their synthesis to understand working of Internal Combustion and Diesel engines.(BL-4)
		C114.5	Demonstrate the concepts of cement, refractories, lubricants & carbon clusters in various engineering applications.(BL-3)

Environmental studies	C115	C115.1	To comprehend the concepts of environment and its importance in our daily life and develop and apply various water conservation methods and conservation of other natural resources also.
		C115.2	To identify the importance of environmental education for protection of life cycles of various bio systems which are essential for bio sphere.
		C115.3	To develop new innovative methods for controlling of environmental pollution which may affect the human health.
		C115.4	To analyze environmental issues related to society and find solutions for environmental problems.
		C115.5	To analyze the effects of increasing human population as well as health associated problems and develop measures to be taken to protect human health.
ELCS -LAB	C116	C116.1	Apply knowledge in seeking right pronunciation with better accent through stress, intonation and rhythm.(BL-3)
		C116.2	Develop speaking skills and active participation in the learning process and become expertise lifelong learning Skills.(BL-3)
		C116.3	Demonstrate the learning skills through participate in Group Discussions, Debates, placemnet Interviews and in Public Speaking. (BL-3)
Engineering chemistry lab	C117	C117.1	Develop skills in determining the effects of hard water and also importance of knowing effects of presence of excess oxygen, acids and bases in water.(BL-3)
		C117.2	Demonstrste the practical knowledge about flow of lubricant with varying temperatures.(BL-2)
		C117.3	Analyze the amount of iron &manganese through different techniques and applying the knowledge in control of corrosion. (BL-4)

Computer Programming Lab	C118	C118.1	Design and develop programs by selecting the right identifiers, data types & operators, control statements, arrays and strings for effective Computation. (BL-3)
		C118.2	Develop the the solution of a given problem by applying functions, pointers,structures &unions.(BL-3)
		C118.3	develop the solution of a given problem through files and Debug erroneous programs related to the problem. (BL-3)
I/II			
EPC	C121	C121.1	Demonstrate listening, reading and writing skills of communication in general and obtain general awareness in science(BL-2)
		C121.2	Develop the oral communication skills in real life scenarios. (BL-3)
		C121.3	Illustrate the life and presentational skills for competitive opportunities. (BL-2)
		C121.4	Apply the life skills to deliver presentation effectively in placements.(BL - 3)
		C121.5	Develop employability skills to enhance career opportunities. (BL - 2)
Mathematics – II	C122	C122.1	Analyze the techniques of Laplace transforms and determine the solutions of ODE in engineering problems.(BL-4)
		C122.2	Describe the mathematical knowledge of Fourier Series to solve various engineering problems.(BL-2)
		C122.3	Illustrate the concepts of Fourier transforms to solve various engineering problems. (BL-2)

		C122.4	Apply the Partial differential equations to generate mathematical models for engineering applications. (BL-3)
		C122.5	Apply the techniques of Z-Transforms to solve difference equations in engineering applications. (BL-3)
MSE	C123	C123.1	Describe the concepts of structure of metals and to find the constitution of alloys (BL-2)
		C123.2	Demonstrate the concepts of construction of equilibrium diagrams and solid state transformations(BL-2)
		C123.3	illustrate the structure and properties of Cast Iron and Steels and non ferrous metals and alloys(BL-2)
		C123.4	Analyze the behaviour of metals under various heat treatment processes. (BL-3)
		C123.5	Describe the properties of ceramic materials and composite materials (BL2)
Engineering physics	C124	C124.1	Describe the concepts of physical optics, lasers and fibre optics in various engineering applications. (BL-2)
		C124.2	Illustrate the X-Ray diffraction techniques for determination of crystal structures & production and detection of ultrasonic waves for non destructive testing of materials. (BL-2)
		C124.3	Analyze the knowledge of basic quantum mechanics and free electron theory of metals to describe the properties of metals. (BL-4)
		C124.4	Demonstrate the physics of semiconductors for electronic devices & properties of various magnetic materials for engineering applications. (BL-3)
		C124.5	Illustrate the concepts of super conducting materials and nano-materials for scientific and engineering applications. (BL-2)

ENGINEERING DRAWING	C125	C125.1	Demonstrate the Principles of Engineering Drawing, BIS conventions and importance of various curves in engineering for solving engineering problems. (BL-2)
		C125.2	Apply the concepts of Engineering scales for drawing view of projection points of a problem. (BL-3)
		C125.3	Analyze the procedure of projection of lines and regular plane surfaces for development of engineering models. (BL-4)
		C125.4	Construct the development of surfaces by understanding the projection of solids concept. (BL-3)
		C125.5	Demonstrate the strategies of projections and visualization skills for conversion of Isometric views into orthographic projections. (BL-2)
MSE lab	C126	C126.1	Identify the importance of various material and structure of the materials(BL-3)
		C126.2	Apply practical application knowledge to test the materials(BL-3)
		C126.3	Apply the knowledge to conduct various tests like hardness tes, impact test, fatigue test for materials(BL-3)
Engineering physics lab	C127	C127.1	Identify the importance of optical phenomenon like Interference and diffraction and illustrstethe knowledge about diffraction phenomenon and applications of lasers. (BL-3)
		C127.2	Apply practical application knowledge of optical fiber and lasers by the study of their relative parameters. (BL-3)
		C127.3	Apply the knowledge of semiconductor and magnetic materials in day to day science applications. (BL-3)
Engineering & IT Workshop (13A99103)	C128	C128.1	Design and development of sheet metal objects by surface development and join the metals for obtaining desired shape.(BL-3)

		C128.2	Build a Personal Computer and Install operating systems and prepare the computer ready to use.(BL-3)
		C128.3	Develop presentation and documentation of a given tasks through Microsoft Windows and access the Internet & test Interconnect two or more computers for information sharing.(BL-3)
II/I			
Mathematics - III(15A54301)	C211	C211.1	Analyze the orthogonal trajectories, simple electric circuits, and non-homogeneous linear differential equations of second and higher order.
		C211.2	Analyze the method of variation of parameter and linear equation with variable coefficient.
		C211.3	Analyze the Taylor's and maclaurin's series and functions of several variables.
		C211.4	Analyze the multiple integral, double and triple integral, chance of variables and chance of order integration.
		C211.5	Analyze the vector calculus and vector integral theorems.
Managerial Economics & Financial Analysis ,15A52301	C212	C212.1	Analyze the relationship of managerial economics with financial accounting and management.
		C212.2	Analyze the production function and cost analysis.
		C212.3	Analyze the perfect and imperfect competition and pricing methods and strategies.
		C212.4	Analyze the financial accounting, profit and loss accounting.
		C212.5	Analyze the working capital requirements and methods and evaluation of capital budgeting projects.

Mechanics of Solids 15A01308	C213	C213.1	Apply the concepts to measure the strength of materials based on calculating stresses, strains and deformations for basic geometries subjected to axial loading and thermal effects
		C213.2	Apply shear force and bending moment diagrams for calculating maximum shear force and maximum bending moment for different types of beams with different lateral loadings conditions
		C213.3	Apply the concepts strength of the beams with different sections by bringing the relationship between the bending stress and maximum bending moment, bringing the relationship between the shear stress and maximum shear force for engineering structural design applications
		C213.4	Analyze the shear strength of the solid and hollow shafts which are subjected to Torsional loading in power transmitting
		C213.5	Analyze different stresses and strains for the thin and thick cylinders in identifying safe design for boiler shells and thick shells as such in like domestic cylinders, air compressor and high pressure vessels used in thermal plants
Engineering Drawing for Mechanical Engineers 15A03301	C214	C214.1	Analyze the different sections of solids and developments of solids
		C214.2	Analyze the different isometric projections of plane figures and solids of objects
		C214.3	Apply the different orthographic views of plane figures and solids in isometric projections
		C214.4	Analyze the concept of interpenetration of right regular solids
		C214.5	Analyze the concept of perspective projections of plane figures and solids

Engineering Mechanics 15A03302	C215	C215.1	Apply the forces and couples in mechanical systems
		C215.2	Apply the frictional forces and its influence in equilibrium
		C215.3	Apply the centre of gravity and moment of inertia for various geometric shapes
		C215.4	Analyze the equations of different motions.
		C215.5	Analyze the forces in the members of the truss (frame) by method of joints and method of sections and also able to understand the concept of vibrations and solve simple problems
Thermodynamics , 15A03303	C216	C216.1	Apply the concepts of thermodynamic property, cycle, constraints of equilibrium in heat and work.
		C216.2	Applying first law of thermodynamics, steady flow energy equation and mass balance equation in various practical applications.
		C216.3	Analyze the problems on heat engines, refrigeration and entropy by applying second law of thermodynamics.
		C216.4	Analyze the thermodynamic properties of the steam.
		C216.5	Apply the basic laws of ideal gas and gas mixtures in standard cycles.
Mechanics of Solids Lab 15A01309	C217	C217.1	Analyze the direct tension beam, simply supported beam, and cantilever beam.
		C217.2	Evaluate the torsion test and Hardness test
		C217.3	Evaluate the hardness test and Brinells hardness test
		C217.4	Evaluate test on springs and compression test on cubes

Computer Aided Drafting Lab 15A03304	C218	C218.1	Analyze the computer aided drafting software packages.
		C218.2	Analyze the basic elements and features of Computer aided drafting packages.
		C218.3	Evaluate the drafting of solids, and intersections of solids.
II/II			
Probability and Statistics 15A54401	C221	C221.1	Analyze the discrete, continuous distribution, and normal distribution.
		C221.2	Analyze the confidence interval of mean from normal distribution and test based on normal distribution.
		C221.3	Analyze the t-test for one sample and two sample, f-test and chi-square test.
		C221.4	Analyze the quality of manufactured products, and shewhart control charts.
		C221.5	Analyze the M/M/I and M/M/S and their related simple problems.
Basic Electrical and Electronics Engineering 15A99301	C222	C222.1	Analyze the Kirchhoff's law, Maximum power transfer and super position theorem for DC Excitations.
		C222.2	Analyze the operations of DC generators, DC shunt generators, speed control of DC shunt motor, and swinburne's test.
		C222.3	Analyze the EMF equation, regulation of transformers, slip-torque characteristics. Also Analyze the intrinsic semiconductors.
		C222.4	Analyze the bipolar junction transistor and junction field effect transistor.
		C222.5	Analyze the oscillators and op-amps and operational amplifiers(Op-Amps)

Machine Drawing 15A03401	C223	C223.1	Analyze the concept of screws, nuts, bolts, keys, gears, webs, ribs.
		C223.2	Apply the sectional views, additional views in machine elements and single parts.
		C223.3	Analyze the assembled views of engine parts and other machine parts.
Kinematics of Machines 15A03402	C224	C224.1	Apply the concepts of different mechanisms with lower and higher pairs in different types of straight line motion mechanisms.
		C224.2	Analyze the principles of Davis and Ackermann's steering gear mechanism and select the different power drives for transmitting power.
		C224.3	Analyze the knowledge on different motions and estimate the displacement, velocity and acceleration of different points on different mechanisms using relative velocity and Instantaneous methods.
		C224.4	Analyze the different gear profiles and calculating the different parameters of gears & Designing of different gear trains for the required purposes in order to transmit power from driving shaft to driven shaft.
		C224.5	Analyze the different cam profiles for different types of followers.
Thermal Engineering – 1 15A03403	C225	C225.1	Apply the working principle in various I.C. engine
		C225.2	Analyze the working and application of fuel supply systems and ignition system
		C225.3	Analyze the combustion chambers and combustion process
		C225.4	Apply the various parameter effecting in performance of I.C. engines.

		C225.5	Analyze the working and performance of air compressor
Manufacturing Technology 15A03404	C226	C226.1	Analyze the elements of casting, construction of patterns and gating systems, moulds, methods of moulding, moulding machines and solidification Of Casting of various metals
		C226.2	Apply the different types of special casting methods and their applications in design of risers and feeding systems, crucible melting, cupola operation and steel making process.
		C226.3	Analyze the different types of welding processes, welds and weld joints, their characteristics, cutting of ferrous and non-ferrous metals by various methods.
		C226.4	Analyze about advanced welding process, heat affected zone (HAZ), Defects and Identification Methods.
		C226.5	Analyze the various surface treatment processes
Thermal Engineering Laboratory 15A03405	C227	C227.1	Analyze the working cycles of engine
		C227.2	Analyze the various types of combustion chambers in IC engines
		C227.3	Apply the working of refrigeration and air conditioning systems
		C227.4	Students will be able to Analyze heat balance sheet of IC engine
		C227.5	Analyze the heat losses in various engines
Manufacturing Technology		C228.1	Analyze the suitable manufacturing process to produce the desired components.

Laboratory 15A03406	C228	C228.2	Apply the best practice to overcome the defects in manufacturing process.
		C228.3	Apply different weld joints in different positions.
		C228.4	Analyze Joining Processes to join Work pieces.
		C228.5	Apply some of the manufacturing process directly in the industry for the preparation of jobs.
Comprehensive Online Examination-I 15A03407	C229	C229.1	Analyze the knowledge in competitive tests on entire second year second semester all the subjects through online exams.
III/I			
Fluid Mechanics and Hydraulic Machines, 15A01510	C311	C311.1	Analyze the fluid statics, kinematics, and dynamics
		C311.2	Analyze the fluid flow in series and parallel and measurement of flow through various devices
		C311.3	Analyze force impact on various plates by the jet and understanding the concept of hydroelectric power station
		C311.4	Analyze the classifications and performance of turbines
		C311.5	Analyze the centrifugal pumps and performance of their characteristic curves
Thermal Engineering - II 15A03501	C312	C312.1	Analyze the power generation through Rankin cycle, efficiency enhancement methods of Reheating and regeneration, quality of steam after evaporation, steam tables and mollier chart and also visit the thermal power station to get real expose.

		C312.2	Apply the working of different high pressure and low pressure boilers, mountings and accessories, chimney height for maximum discharge, draughts and its application in the steam generator, Boilers, and in the power generation units to get better expose.
		C312.3	Apply the ideal flow and actual flow through nozzle, maximum discharge through nozzle, Critical pressure ratio in calculations, effect of meta stable flow/ super saturation flow through nozzle
		C312.4	Analyze the working of impulse and reaction turbines, velocity triangle and combined velocity triangle and can learn its importance in determining the power produced by the turbine, rotor speed and methods to reduce, visit thermal power stations for better understanding the working of turbines
		C312.5	Analyze familiar with the basic components of a gas turbine power plant, power generation using Joule Cycle, increase the specific power output and efficiency of the cycle, propulsive devices, visit Gas power generation plants
Dynamics Of Machinery 15A03502	C313	C313.1	Apply the Concepts of Friction for different types of Bearings, clutches, Brakes and Dynamometers in selecting suitable devices to transmit Power.
		C313.2	Analyze the Gyroscopic principles on moving vehicles and to draw the different turning moment diagrams for steam engines, IC engines to store Energy.
		C313.3	Apply the dimensions of different governors in select the suitable governors to control the speed.
		C313.4	Analyze the unbalance of Rotating and Reciprocating masses.

		C313.5	Analyze the magnitude of different vibrations, vibration isolation of dynamic system and torsional vibration frequency calculations of different rotor systems.
Machine Tools, 15A03503	C314	C314.1	Analyze the basic concepts of the metal cutting and mechanism of chip formation.
		C314.2	Apply various tooling accessories used in turning and understand different constructions of lathe depending the nature of operation
		C314.3	Analyze basic principle of drilling, shaping and planning operations and its parts and machine time calculations
		C314.4	Analyze the principle of milling, grinding, lapping, honing and broaching operations, parts and Classification of grinding and milling machines
		C314.5	Apply the basic concepts of jigs, fixtures and Unconventional Machining Methods in USM, AJM, EDM, LBM, EBM, CM and ECM.
Design of Machine Member - I 15A03504	C315	C315.1	Apply the design knowledge in selecting engineering materials, in manufacturing considerations.
		C315.2	Apply fundamental approaches in failure criteria for static and dynamic loading.
		C315.3	Analyze procedures for design of riveted and bolted joints.
		C315.4	Apply design knowledge in design of cotter joint, knuckle joint and shafts.
		C315.5	Apply design knowledge in design of rigid and flexible shaft couplings.
Entrepreneurship, 15A03505	C316	C316.1	Apply the ethics and social responsibility of entrepreneurs and opportunities of entrepreneurs in India and abroad.

		C316.2	Analyze the business plan nature, scope of business plan, marketing plan, and financial plan.
		C316.3	Analyze the financing and managing the new venture, E-commerce and Entrepreneurships.
		C316.4	Analyze the feature and evaluation of joint ventures, bonus issues and stock splits.
		C316.5	Analyze the plant utilization and maintenance, sales promotion and product pricing.
Fluid Mechanics and Hydraulic Machines Laboratory 15A01511	C317	C317.1	Analyze the coefficient of discharge of orifice and venturimeter
		C317.2	Analyze the coefficient of discharge for small orifice by constant head method and external mouth piece by variable head method
		C317.3	Apply the Bernoulli's principle and determination of coefficient of loss of head in a sudden contraction and friction factor
		C317.4	Analyze the coefficient of impact of jets on various vanes and understand the hydraulic jump
		C317.5	Analyze the performance test on pelton wheel, francis turbine, and centrifugal pump
Machine Tools Laboratory 15A03508	C318	C318.1	Analyze the different machine tools
		C318.2	Analyze the work holders
		C318.3	Apply operating principles in different part features to the desired quality.
		C318.4	Analyze the sequence of machining operations required for industry
		C318.5	Apply Capable of manufacturing components in given drawings using various machine tool

III/II

III/II			
Operations Research15A03601	C321	C321.1	Create mathematical models of the real life situations and capable of obtaining best solution using Graphical Method and Simplex Method.
		C321.2	Implement the theory of duality for simplifying the solution procedure for certain LPPs, and solve the special cases of LPP such as Transportation and Assignment problems.
		C321.3	Choose the best strategy out of the available strategies to face the competition and also capable of identifying the suitable Queuing Model for real world waiting lines.
		C321.4	Identify the sequence that would minimize the total elapsed time and also capable of representing any project in the form of a network.
		C321.5	Apply Dynamic Programming technique to solve the complex problems and also to identify the economic replacement policies for the continuous functioning of machinery in an organization.
Design of Machine Members - II15A03602	C322	C322.1	Analyze stresses and radius of neutral axis in curved beams of crane hooks, c-clamps and design a belt for the type of drive and select the width, length, velocity and power for flat belt, v-belt, rope and chain drives.
		C322.2	Analyze helical compression and tension springs with respect to static and dynamic axial loads and applying design concepts in designing of power screws.
		C322.3	Able to Analyze radial loads for rolling contact bearing & select appropriate bearing for the application and know the advantages of rolling contact bearing against sliding contact bearing.
		C322.4	Able to Analyze spur and helical gears for different input conditions and able to check for dynamic and wear considerations.

		C322.5	Apply failure criteria for various parts in IC engine.
Heat Transfer 15A03603	C323	C323.1	Analyze the principles governing the transfer of heat and techniques.
		C323.2	Analyze the extended surface and transient heat conduction.
		C323.3	Analyze the natural and forced Convection
		C323.4	Apply heat transfer properties in boiling, condensation and heat exchanger.
		C323.5	Analyze the radiative heat transfer and its application.
Finite Element Method 15A03604	C324	C324.1	Apply the basic principles and approaches in solving FEM problems in different fields.
		C324.2	Analyze the FEM models for simple problems and different fields.
		C324.3	Analyze the functions of higher order, iso-parametric elements.
		C324.4	Apply the principles to find stresses in beams and stresses and temperature distribution in composite walls and fins.
		C324.5	Analyze the bars, trusses, beams and heat transfer problems using FEM and also to apply boundary conditions in realistic problems.
Metal Forming Process 15A03605	C325	C325.1	Analyze the one, two, and three dimensional stress analysis, theory of plasticity, strain hardening and the concepts of hot and cold working process.
		C325.2	Apply the principles of rolling and forging process in various industry.
		C325.3	Analyze the extrusion process and wire drawing and their industrial applications.

		C325.4	Analyze the various Press working processes.s
		C325.5	Apply the concept of the concept of plastic manufacturing process, rapid manufacturing process in various industrial applications.
Total Quality Management 15A03607	C326	C326.1	Develop static user interfaces for web applications with HTML and CSS. (BL-3)
		C326.2	Builddynamic user interfaces forclient-side scripting using JavaScript. (BL-3)
		C326.3	Modela client server architectureusingPHP. (BL-3)
		C326.4	Illustrate simple data storage and transmission between client and server throughXML programs. (BL-2)
		C326.5	Demonstratevarious web services in service-oriented architecture. (BL-2)
15A03609	C327	C327.1	Develop database application through the concepts of data warehouse and WEKA tool. (BL-3)
		C327.2	Apply the data preprocessing techniques and Demonstrate performing association rule mining on datasets. (BL-3)
		C327.3	Apply classification, clustering and regression algorithms to generate useful information from the database. (BL-3)
Computer Aided Engineering Laboratory 15A03610	C328	C328.1	Analyze the plane stress, plane strain conditions and axisymmetric loading on in plane members.
		C328.2	Analyze the failure behavior of different structures.
		C328.3	Analyze the trusses and beams with various cross sections and to determine stress, strains and deflections, shear force and bending moments under static and combined loading.

		C328.4	Apply suitable boundary conditions to a global equation in steady state heat transfer and solve those using nodal temperatures.
		C328.5	Apply suitable boundary conditions to a global equation in fluid flow problems and solve them using flow rate and velocities.
Comprehensive Online Examination-II Advanced English Language Communication Skills (AELCS) Laboratory 15A52602	C329	C329.1	Evaluate the reading, listening comprehension and vocabulary development
		C329.2	Analyze the report e-mail writing and resume preparation.
		C329.3	Analyze the oral, power, and poster presentation
		C329.4	Analyze the debates, group discussion, and job interviews.
		C329.5	Analyze the time management, problem solving and decision making.
Comprehensive Online Examination-II, 15A03611		C32A0	Analyze the knowledge in competitive tests on entire third year second semester all the subjects through online exams.
IV/I			
Management Science 15A52601	C411	C411.1	Analyze the scientific management, modern management and designing organization structures.
		C411.2	Analyze the plant location and layout, methods of production, and marketing management.
		C411.3	Analyze the human resource planning and employee training and development.
		C411.4	Analyze the corporate planning process and project management.
		C411.5	Analyze the materials requirement planning, total quality management, and enterprise resource planning.

Automobile Engineering 15A05701	C412	C412.1	Analyze the function of each and every component of an automobile, turbo charging and super charging.
		C412.2	Analyze the knowledge on emission standards, emission control Techniques and electrical systems.
		C412.3	Analyze the each and every Component of transmission system of a automobile.
		C412.4	Analyze the Rigid Axle Suspension System, Torsion Bar, Shock Absorber, Independent Suspension System. Braking System: Mechanical Brake System, Hydraulic Brake System, Pneumatic and Vacuum Brake Systems
		C412.5	Analyze the suspension system and Braking system of an automobile.
CAD/CAM,15A03702	C413	C413.1	Apply the basic concepts Automation, components of CAD/CAM, input and output components of CAD, Steps involved in computer aided design.
		C413.2	Students are able to Analyze the geometric model of the component in CAD technology of computer graphics. The techniques of raster technology, scan conversion, clipping, removal of hidden lines and hidden surfaces, color, shading and texture.
		C413.3	Apply the various requirements of information that are generated during geometric modeling stage, various types and its applications, mathematical representations of curves used in geometric construction.
		C413.4	Analyze the principle of NC, CNC , Machining Centre and various methods of part programming.
		C413.5	Analyzing the need of computers in process planning and concept of FMS, and its elements etc
Metrology and Measurements 15A05703	C414	C414.1	Apply the Limits, Fits and Tolerance, Indian standard system and International Standard organization system in instruments for measuring linear and angular distances.

		C414.2	Analyze the different types of Comparators, optical measuring instruments, flatness measurement methods and measuring methods of surface roughness.
		C414.3	Analyze the screw thread elements and measuring methods, Gear tooth profile measurement, CMM, Alignment tests on lathe, milling and drilling machine tools.
		C414.4	Analyze working of various instruments used for displacement, temperature and pressure.
		C414.5	Analyze various instruments used for measuring for flow, speed, stress, strain and Vibration.
Modern Manufacturing Methods 15A03706	C415	C415.1	Analyze the various types of unconventional machining processes and difference between conventional and unconventional machining processes
		C415.2	Apply the machining concepts of ultrasonic, abrasive jet, water jet, abrasive water jet machining in order to get desired shaped objects of various materials
		C415.3	Analyze the machining concepts of Electro chemical and Chemical machining processes in getting any electrically conductive work material irrespective of the hardness, strength or even thermal properties.
		C415.4	Analyze the machining concepts of EDM, Wire cut EDM for making of cylindrical, non cylindrical objects with high precision.
		C415.5	Apply the suitable machining processes of EBM, LBM and PAM in welding cryogenic, aerospace and high temperature corrosion resistant alloys.
Production & Operations Management 15A03709	C416	C416.1	Analyze the Production planning & controls operations and its functions, productivity and productivity measurements, design of goods and services and aggregate planning.

		C416.2	Analyze the importance of forecasting, uses of long term and short term forecasting and application of qualitative and quantitative methods for finding the future demands.
		C416.3	Analyze the layout of part and design to facilitate material flow and processing of a product in the most efficient manner.
		C416.4	Apply the philosophy of lean management in develop lean enterprise and basic concepts of JIT, Six sigma control etc.,
		C416.5	Analyze the scheduling policies, concepts of Inventory and recognize the importance of Inventory control.
CAD/ CAM Laboratory15A03710	C417	C417.1	Analyze the 2D drafting of machine components in sketcher mode by applying constraints.
		C417.2	Analyze the 3D modeling of a component in part mode to visualize the component.
		C417.3	Evaluate all the assemble parts by applying the constraints to make it a single component.
		C417.4	Evaluate the program using G-codes and M-codes and simulate the program.
		C417.5	Evaluate the machine a component on CNC Lathe machine by executing various machining operations.
Metrology and Measurements Laboratory 15A05711	C418	C418.1	Analyze the instruments as well as operating principles of measuring instruments
		C418.2	Evaluate the Force measurement by using strain gauge.
		C418.3	Analyze the measurement of Displacement by using Linear Variable Differential Transformer
		C418.4	Analyze the measurement of Speed with the help of Transducer

		C418.5	Analyze the Temperature and unknown weight by using Thermocouple and Load cell respectively.
IV/II			
Industrial Engineering 15A05802	C421	C421.1	Apply functional areas of organizations, Management Principles in various types of organizational structure that needs to be followed based on size and type of organization.
		C421.2	Analyze the qualitative and quantitative parameters for locating a plant and decide on plant layouts and optimization.
		C421.3	Apply work study concept in various industries and also capable of setting time standards for doing work, develop procedures to arrive at the standard time.
		C421.4	Analyze various activities associated with Material Management like Material Procurement, Inventory Maintenance, Keeping track on Material consumption etc.
		C421.5	Analyze the functions of HRM, methods of Performance Evaluation, wage, calculation and Inspection & Quality Control.
Power Plant Engineering 15A03804	C422	C422.1	Analyze the importance of power production suited to the demand and power distribution, Power Tariff, Load Factor and other related terms.
		C422.2	Analyze the latest high pressure boilers, concept of fluidized bed combustion and importance of handling and storage, waste heat recovery methods.
		C422.3	Analyze the importance of power production suited to the demand and power distribution, Power Tariff, Load Factor and other related terms.

		C422.4	Analyze the water power, the methods of storing water, and constructions of dams and spill ways.
		C422.5	Analyze the power generation through secondary energy sources, the power generation through solar energy, wind energy, MHD and Nuclear energy.
COMPRHENSIVE VIVA VOCE	C423	C423.1	Recall the fundamentals of mathematics and Engineering
		C423.2	Relate comprehensive understanding of techniques applicable to their own area of professional practice
		C423.3	Develop their Communication skills and Build confidence to face the interviews
Technical Seminar15A04806	C424	C424.1	Survey in research oriented field and develop the literature documentation. (BL-4)
		C424.2	Develop the competency skills in the field of engineering interdisciplinary approaches for better understanding of technological advances. (BL-3)
		C424.3	Develop the life long learning skills on the recent trends & technologies to Communicate effectively on complex engineering activities. (BL-3)