



Viswambhara Educational Society

VAAGDEVI COLLEGE OF ENGINEERING

UGC-Autonomous

Department of Mechanical Engineering

COURSE OUTCOMES FOR B.TECH - ME R18 FOR THE YEAR 2018-2019

| Course Outcome | Year/Semester I/I Sem | Subject Name (Subject Code) LINEAR ALGEBRA AND CALCULUS (B18MA01) | No. of Hours L:3 T:1 P:0 | Credits: 4 |
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| After the completion of this course, the students should be able to | | | | |
| 1 | Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations | | | |
| 2 | Find the Eigen values and Eigen vectors | | | |
| 3 | Reduce the quadratic form to canonical form using orthogonal transformation | | | |
| 4 | Analyze the nature of sequence and series. | | | |
| 5 | Solve the applications on the mean value theorems. | | | |
| 6 | Evaluate the improper integrals using Beta and Gamma functions | | | |
| 7 | Find the extreme values of functions of two variables with/ without constraints. | | | |
| Course Outcome | Year / semester I/I Sem | Subject Name (Subject Code) ENGLISH (B18EN01) | No. of Hours L:2 T:0 P:0 | Credits:2 |
| After the completion of this course, the students should be able to | | | | |
| 1 | Use English Language effectively in spoken and written forms. | | | |
| 2 | Comprehend the given texts and respond appropriately. | | | |
| 3 | Communicate confidently in various contexts and different cultures. | | | |
| 4 | Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills. | | | |
| Course Outcome | Year / semester I/I Sem | Subject Name (Subject Code) ENGINEERING CHEMISTRY (B18CH01) | No. of Hours L:3 T:1 P:0 | Credits: 4 |
| After the completion of this course, the students should be able to | | | | |
| 1 | The knowledge of molecular and electronic changes, band theory related to conductivity. | | | |
| 2 | The knowledge of water treatment and corrosion. | | | |
| 3 | The knowledge of organic reaction mechanisms and polymers. | | | |
| 4 | Apply phase rule and adsorption to construct the materials by analyzing their compositions. | | | |

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| 5 | The required principles and concepts of electro chemistry and batteries. | | | |
| Course Outcome | Year / semester I/I Sem | Subject Name (Subject Code) ENGINEERING GRAPHICS (B18ME01) | No. of Hours L:1 T:0 P:4 | Credits: 3 |
| After the completion of this course, the students should be able to | | | | |
| 1 | Analyse the Projections of Points. | | | |
| 2 | Understand the projections of solids. | | | |
| 3 | Estimate the use of drawings, dimensioning, scales and conic sections | | | |
| 4 | Modify the applications of this knowledge in computer graphics. | | | |
| 5 | Compare the Conversion of Isometric views to Orthographic views | | | |
| Course Outcome | Year / semester I/I Sem | Subject Name (Subject Code) ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB(B18EN02) | No. of Hours L:0 T:0 P:2 | Credits: 1 |
| After the completion of this course, the students should be able to | | | | |
| 1 | Better understanding of nuances of English language through audio- visual experience and group activities. | | | |
| 2 | Speaking with clarity and confidence which in turn enhances their employability skills. | | | |
| Course Outcome | Year /semester I/II Sem | Subject Name (Subject Code) DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B18MA02) | No. of Hours L:3 T:1 P:0 | Credits: 4 |
| After the completion of this course, the students should be able to | | | | |
| 1 | Identify whether the given differential equation of first order is exact or not | | | |
| 2 | Solve higher differential equation and apply the concept of differential equation to real world problems. | | | |
| 3 | Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and gravity for cubes, sphere and rectangular parallel piped. | | | |
| 4 | Evaluate the line, surface and volume integrals and converting them from one to another. | | | |
| Course Outcome | Year /Semester I / II Sem | Subject Name (Subject Code) ENGINEERING PHYSICS (B18PH03) | No. of Hours L:3 T:1 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | The student learns about transformation concept learns basics of quantum mechanics. | | | |
| 2 | The student gains knowledge on basics of rigid body dynamics and lasers which leads to new innovations and improvements. | | | |
| 3 | The knowledge of physics relevant to engineering is critical for converting ideas into technology.. | | | |
| 4 | Characterization and study of properties of optodevices helps the students to prepare new materials for various engineering applications. | | | |
| Course Outcome | Year /Semester I / II Sem | Subject Name (Subject Code) ENGINEERING MECHANICS (B18CE01) | No. of Hours L:3 T:1 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |

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| 1 | Know the fundamental knowledge of Specification of force vector. | | | |
| 2 | Compare Spatial Force systems. | | | |
| 3 | Understand the Coplanar Force Systems. | | | |
| 4 | Apply Deformation of Stepped shaft due to axial loading in problems. | | | |
| 5 | Evaluate Kinematics Problems and Kinetics Problems. | | | |
| Course Outcome | Year /Semester I / II Sem | Subject Name (Subject Code) ENGINEERING WORKSHOP & IT WORKSHOP (B18ME02) | No. of Hours L:0 T:0 P:3 | Credits:1.5 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Know the fundamental knowledge of various trades and their usage in real time Applications. | | | |
| 2 | Compare Foundry, Welding, Black smithy, Fitting, Machine shop and house wiring. | | | |
| 3 | Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering. | | | |
| 4 | Apply basic concepts of computer hardware for assembly and disassembly. | | | |
| Course Outcome | Year /Semester I / II Sem | Subject Name (Subject Code) ENGINEERING PHYSICS LAB (B18PH04) | No. of Hours L:0 T:0 P:3 | Credits:1.5 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | The laboratory course helps the student how to operate different equipments related to engineering. It also allows the student to develop experimental skills to design new experiments in engineering. | | | |
| 2 | The course enlightens the student about modern equipment like solar cell, optical fibre etc., | | | |
| 3 | With the exposure to these experiments, the student can compare the theory and correlate with experiment. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING (B18EE02) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Learn Basic circuit concepts such as electrical parameters, quantities , laws and network reduction techniques and apply the network theorems with DC excitation in the systems | | | |
| 2 | Analyze the steady state operation of single phase and three phase AC circuits and study the relationship between voltage and current for delta and star connections. | | | |
| 3 | Explore the construction, working , control and testing of various DC and AC Machines | | | |
| 4 | Gain knowledge on basic electronic devices such as P-N junction Diode, rectifiers and filter with their V-I characteristics. | | | |
| 5 | Acquire extended knowledge on next generation of electronic devices such transistors, zener diode and SCR devices. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) METALLURGY AND MATERIAL SCIENCE (B18ME03) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the bond formation, grains and grain boundaries in crystalline metals. | | | |

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| 2 | Apply lever rule in calculating the liquid and solid percentage. | | | |
| 3 | Apply heat treatment processes to different materials to get required properties. | | | |
| 4 | Gain knowledge about advanced materials like composites & ceramics. | | | |
| 5 | Analyze the applications and the properties of cast irons and steels. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) MECHANICS OF SOLIDS (B18ME04) | No. of Hours L:3 T:1 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the concepts of stress and strain in mechanics of solids and material properties. | | | |
| 2 | Apply the fundamental concepts of shear force & bending moment for Cantilever beam, simply supported beam & overhanging beam with point loads, UDL, gradually varying loads & their combination. | | | |
| 3 | Apply the fundamental concepts of Bending stresses & shear stresses for different Beams. | | | |
| 4 | Apply the different methods to determine the deflection & slope of different beams like double integration method, Area moment method & Macaulay's method. | | | |
| 5 | Apply the Lamé's equation to determine stresses in Thick cylinders. To understand the concept of torsion and its application to circular shafts. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) THERMODYNAMICS (B18ME05) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the basic thermodynamic principles and their applications | | | |
| 2 | Apply the laws of thermodynamics for different thermal systems. | | | |
| 3 | Use mollier diagram and steam tables to find the properties of pure substances. | | | |
| 4 | Calculate different properties of perfect gases, real gases and mixtures of perfect. | | | |
| 5 | Analyse different power cycles. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) MACHINE DRAWING (B18ME06) | No. of Hours L:1 T:0 P:2 | Credits:2 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand various conventions used in machine drawing. | | | |
| 2 | Prepare the assembly and part drawings from component drawing. | | | |
| 3 | Identify the use of various machine components. | | | |
| 4 | Interpret and make conclusions about a given drawing. | | | |
| 5 | Apply the First angle projection. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) MECHANICS OF SOLIDS AND METALLURGY LAB (B18ME07) | No. of Hours L:0 T:0 P:3 | Credits:1.5 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Identify grain and grain boundary, crystal structure of different materials. | | | |

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| 2 | Study the microstructure of various materials. | | | |
| 3 | Analyze the correlation between Mechanical and Metallurgical properties. | | | |
| 4 | Perform material testing and analyze various material properties. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) FUELS AND LUBRICANTS LAB (B18ME08) | No. of Hours L:0 T:0 P:2 | Credits:1 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply different methods to determine the flash point & fire point of liquid fuels. | | | |
| 2 | Apply carbon residue test to determine carbon% in liquid fuels. | | | |
| 3 | Apply Different methods to determine viscosity of Liquid lubricants. | | | |
| 4 | Apply different methods to determine the calorific value of fuels. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB (B18EE03) | No. of Hours L:0 T:0 P:3 | Credits:1.5 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | 1 Learn to simplify complex electric and electronic circuits by applying the KVL and KCL laws. | | | |
| 2 | Identify the optimal loading on the system. | | | |
| 3 | Analyze the performance of DC machines. | | | |
| 4 | Identify and analyze the performance and operation of semi conducting devices. | | | |
| Course Outcome | Year /Semester II / I Sem | Subject Name (Subject Code) INDIAN CONSTITUTION (B18MC04) | No. of Hours L:2 T:0 P:0 | Credits:0 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | To introduce the concepts and features Indian constitution. | | | |
| 2 | To identify the core values reflected in Preamble of the Constitution. | | | |
| 3 | To examine the nature of the Indian federal system and the parliamentary form of government. | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) GENDER SENSITIZATION (B18MC07) | No. of Hours L:2 T:0 P:0 | Credits:0 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Students will have developed a better understanding of important issues related to gender in contemporary India. | | | |
| 2 | Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and films. | | | |
| 3 | Students will attain a finer grasp of how gender discrimination works in our society and how to counter them. | | | |
| 4 | Students will acquire insights into the gendered division of labour and its relation to politics and economics. | | | |
| 5 | Men and women students and professionals will be better equipped to work and live in | | | |

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| | harmony. Students will develop a sense of appreciation of women in all walks of life. | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) PROBABILITY & STATISTICS (B18MA05) | No. of Hours L:3 T:1 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Use probability theory and deals with modelling uncertainty and apply discrete and continuous probability, in order to evaluate the probability of real world events. | | | |
| 2 | Develop discrete probability distributions and its applications, and use these techniques to generate data from Binomial and Poisson Distributions. | | | |
| 3 | Develop continuous probability distributions and its applications, and use these techniques to generate data from Normal Distribution. | | | |
| 4 | Perform correlation analysis, in order to estimate the nature and the strength of the linear relationship that may exist between two variables of interest, Perform regression analysis to estimate the magnitude of change in one variable due to a given change in the other variable. | | | |
| 5 | Construct confidence interval estimates for population parameters and conduct hypothesis tests concerning population parameters, for single and multiple populations based on sample data. And also perform Student T-test, F-test and X ² - test(chi-square). | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) FLUID MECHANICS & HYDRAULIC MACHINERY (B18ME09) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply mathematics and basic sciences and translates this knowledge to understand fluid flow principles and their applications. | | | |
| 2 | Understand fundamental knowledge of the mechanics of fluid at rest and in motion. | | | |
| 3 | Observe fluid phenomena by developing and using the principles, laws. | | | |
| 4 | Analyze fluid interactions with natural and constructed systems. | | | |
| 5 | Associate fundamental knowledge & performance of different turbines & pumps. | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) THERMAL ENGINEERING-I (B18ME10) | No. of Hours L:3 T:1 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the concept and working of two and four strokes I.C. engines. | | | |
| 2 | Analyse the normal and abnormal condition for the combustion of SI and CI engines also the parameters which effect the combustion characteristics. | | | |
| 3 | Able to calculate the performance of the engine with different parameters. | | | |
| 4 | Get knowledge about compressors and their classifications. | | | |
| 5 | Differentiate various compressor on the basis of their working and requirement and can use suitable one. | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) KINEMATICS OF MACHINES (B18ME11) | No. of Hours L:4 T:0 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |

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| 1 | Identify the basic mechanisms involved in machines. | | | |
| 2 | Develop familiarity with application of kinematics theories to real-world machines. | | | |
| 3 | Identify the basic relations between distance, time, velocity and acceleration. | | | |
| 4 | Understand analytical linkage analysis, determine cam profiles | | | |
| 5 | Analyze gear trains and gear profiles. | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) PRODUCTION TECHNOLOGY (B18ME12) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply the knowledge of casting, welding joints and forces and power requirements in metal forming processes. | | | |
| 2 | Relate the melting, solidification, pattern allowances, gating and riser design of mold cavity, aspects of casting. | | | |
| 3 | Understand basic calculations of forces and power requirements in the metal forming operations. | | | |
| 4 | Differentiate the application of welding using the arc welding, gas welding, resistance welding, soldering and brazing. | | | |
| 5 | Survey the defects occurring in forging operation. | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) FLUID MECHANICS & HYDRAULIC MACHINERY LAB (B18ME13) | No. of Hours L:0 T:0 P:3 | Credits:1.5 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply knowledge of fluid mechanics and hydraulic machines and translates this knowledge for understanding fluid flow principles and their application to experiments. | | | |
| 2 | Practical exposure by using components vacuum gauge, pressure gauge, manometers, pipes, motors, pumps & turbines. | | | |
| 3 | Use comparison of theoretical values with the real parameters. | | | |
| 4 | Know and understand the experimental analysis in turbines and pumps with parameters such as discharge, head of water, speed of brake drum. | | | |
| Course Outcome | Year /Semester II / II Sem | Subject Name (Subject Code) PRODUCTION TECHNOLOGY LAB (B18ME14) | No. of Hours L:0 T:0 P:3 | Credits:1.5 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand basic knowledge and concepts of various experiments. | | | |
| 2 | Perform joining of materials (similar/dissimilar) using welding. | | | |
| 3 | Analyze the concepts of extrusion and design of die. | | | |
| 4 | Operate injection molding and blow molding machines. | | | |
| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) MACHINE TOOLS AND METAL CUTTING (B18ME15) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply cutting mechanics to metal machining based on cutting force and power | | | |

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| | consumption. | | | |
| 2 | Operate lathe, milling machines, drill press, grinding machines, etc. | | | |
| 3 | Evaluate mach inability of different materials using specific cutting forces and surface finish. | | | |
| 4 | Understand Principles of design of Jigs and fixtures. | | | |
| 5 | Compare grinding, lapping and honing operations. | | | |
| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) DYNAMICS OF MACHINERY (B18ME16) | No. of Hours L:4 T:0 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Analyze the forces and torques in mechanisms and machines in operation. Know the function of governors, clutches and bearings. | | | |
| 2 | Compute the frictional torque in clutches and braking torque in brakes. | | | |
| 3 | Design the flywheel for different IC engines. | | | |
| 4 | Evaluate the balancing masses in rotary and reciprocating balancing. | | | |
| 5 | Calculate the frequencies of different vibrations. | | | |
| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) DESIGN OF MACHINE MEMBERS – I (B18ME17) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Design a particular machine element and make use of standards parts and dimensions using design data book. | | | |
| 2 | Design of shafts , shaft couplings like flange couplings, flexible couplings. | | | |
| 3 | Determine the Stresses and deflections of bolded joints, keys, cotters, knuckle joints. | | | |
| 4 | Determine the Stresses and deflections of helical springs. | | | |
| 5 | Design of riveted, welded joint and screwed joints. | | | |
| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) METROLOGY AND SURFACE ENGINEERING (B18ME18) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply mathematics to calculations of surface texture assessment by using C.L.A. and R.M.S. methods. | | | |
| 2 | Analyse principles of optics, interference, light to optical flats, interferometers, microscopes and optical measuring instruments. | | | |
| 3 | Compare tabulated physical data that are useful to assembly of components, clearance, transition, interference fits. | | | |
| 4 | Illustrate linear, angular measurement by using various micrometers, bevel protractor, auto collimator etc., | | | |
| 5 | Classify the basic techniques of surface engineering, surface treatment, surface coatings, and surface cleanings. | | | |

| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) THERMAL ENGINEERING – II (B18ME19) | No. of Hours L:3 T:0 P:0 | Credits:3 |
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| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the basic concept behind the thermal power plant. | | | |
| 2 | Get knowledge about working of boilers with their specification. | | | |
| 3 | Analyze the importance of nozzle and condenser in steam power plant. | | | |
| 4 | Identify the different types of steam turbines and use accordingly to the requirement. | | | |
| 5 | Get the concepts of gas power plant with its different components. | | | |
| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS (B18MB01) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | To study fundamental concepts in managerial economics and financial analysis including certain basic issues governing the business operations. | | | |
| 2 | To learn the concepts of demand, elasticity of demand and demand forecasting and methods of demand forecasting. | | | |
| 3 | To learn various issues involved in production decision analysis. | | | |
| 4 | To gain the knowledge of Break – Even Analysis and its importance in managerial decision making. | | | |
| 5 | To learn different types of market environment under various types of competition. | | | |
| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) DESIGN OF MACHINE MEMBERS – I (B18ME17) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Design a particular machine element and make use of standards parts and dimensions using design data book. | | | |
| 2 | Design of shafts , shaft couplings like flange couplings, flexible couplings. | | | |
| 3 | Determine the Stresses and deflections of bolted joints, keys, cotters, knuckle joints. | | | |
| 4 | Determine the Stresses and deflections of helical springs. | | | |
| 5 | Design of riveted, welded joint and screwed joints. | | | |
| 6 | To gain the knowledge of new economic environment in post – liberalization scenario. | | | |
| 7 | To know the concepts of capital budgeting and various methods of capital budgeting and its application in business decision making. | | | |
| Course Outcome | Year /Semester III/ I Sem | Subject Name (Subject Code) ENTREPRENEURSHIP DEVELOPMENT (B18MB03) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | To understand the mindset of the entrepreneurs, identify ventures for launching, develop an idea on the legal framework. and also understand strategic perspectives in entrepreneurship. | | | |

| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
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| | III/ I Sem | ENERGY STORAGE SYSTEMS (B18EE49) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply the technology to have energy storage system for any electrical Loads. | | | |
| 2 | To save the electrical power in peak time loads using ESS.. | | | |
| 3 | To store energy and to avoid the environmental pollution | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:1.5 |
| | III/ I Sem | THERMAL ENGINEERING LABORATORY (B18ME20) | L:0 T:0 P:3 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Identify various types of engines and their parts. | | | |
| 2 | Understand the power of different engine and where they can be used. | | | |
| 3 | Estimate the performance of different engine and analyze them. | | | |
| 4 | Analyze engines to set better efficiencies by knowing Brake specific fuel consumption of the engines. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:1.5 |
| | III/ I Sem | METROLOGY AND MACHINE TOOLS LABORATORY (B18ME21) | L:0 T:0 P:3 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Use different types of measuring instruments | | | |
| 2 | Perform different operations on Lathe machines. | | | |
| 3 | Measure angles and taper measurements. | | | |
| 4 | Evaluate different heights by using Vernier height gauge. | | | |
| 5 | This course provides fundamental knowledge and principles of machining to the operation of different machining processes on machine tools. | | | |
| 6 | The course draws upon knowledge of metal cutting principles turnouts the lathes, milling, drilling, shaping, slotting, and grinding machines. | | | |
| 7 | The course shows how to evaluate machined work piece surface finish and dimensional accuracy using metrology equipment. | | | |
| 8 | Students will be able to differentiate the lubrication and cooling effects of various cutting fluids. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
| | III/ II Sem | FINITE ELEMENT METHODS (B18ME22) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Student is able to analyze real time engineering objects and to present a well designed structures. | | | |
| 2 | Student can analyze bars beams, shafts and array symmetric solids. | | | |
| 3 | Student is able to understand and analyze the heat flow and know the temperature distribution at various points on the components. | | | |
| 4 | Student can analyze any complicated structure by utilizing the computer software like ANSYS instead of analytical methods. | | | |

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| 5 | Estimate Load vector and stresses in 2D problems. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) DESIGN OF MACHINE MEMBERS – II (B18ME23) | No. of Hours L:4 T:0 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Design journal and roller bearings, | | | |
| 2 | Design engine parts like connecting rod, crank pins, crank shafts, pistons, cylinder and cylinder liner. | | | |
| 3 | Understand Power transmission system by belt drives and chain drives. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) HEAT& MASS TRANSFER (B18ME24) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the basics of heat transfer with good knowledge of conduction , convection and radiation. | | | |
| 2 | Identify the free convection and forced convection requirement for particular design. | | | |
| 3 | Analyse the concept of heat convection and get better result from free convection. | | | |
| 4 | To know the concept of hydrodynamics and thermal boundary in forced convection. | | | |
| 5 | Design effective heat exchanger by considering concepts of radiation heat transfer along with conduction and convection. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) ENVIRONMENTAL SCIENCE (B18MC02) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Recall previously learned ecosystem and find how the biodiversity changes went in the environment. | | | |
| 2 | Demonstrate outlines of types of pollutions and related to day-to-day life. | | | |
| 3 | Organize important seminars on natural resources. | | | |
| 4 | Apply models of food chains and energy flow models to solve the identified parameters. | | | |
| 5 | Classify the types of pollutants and distinguish the functions of sustainable development that take part in the environment. | | | |
| 6 | Design the experiments with BOD, COD, OD and to estimate the micro organisms which cause contamination and can propose solutions. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) INDUSTRIAL MANAGEMENT (ELECTIVE-I) (B18MB05) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Plan an organizational structure for a given context in the organisation carry out production operations through Work study. | | | |
| 2 | Carry out production operations through Work study. | | | |
| 3 | Understand the markets, customers and competition better and price the given products appropriately | | | |

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| 4 | Ensure quality for a given product or service. | | | |
| 5 | Plan and control the HR function better. | | | |
| 6 | Plan, schedule and control projects through PERT and CPM. | | | |
| 7 | Evolve a strategy for a business or service organisation. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) DATABASE MANAGEMENT SYSTEMS (OPEN ELECTIVE) (B18CS08) | No. of Hours L:4 T:0 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts. | | | |
| 2 | An ability to apply knowledge of mathematics, science, and engineering to realworld problems. | | | |
| 3 | Ability to model, understand, and develop complex software for system software as well as application software. | | | |
| 4 | An ability to communicate effectively, both in writing and oral. | | | |
| 5 | The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts | | | |
| 7 | A recognition of the need for, and an ability to engage in life-long learning. | | | |
| 8 | A knowledge of contemporary issues. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) DISASTER MANAGEMENT (OPEN ELECTIVE) (B18CE54) | No. of Hours L:4 T:0 P:0 | Credits:4 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Acquire the knowledge of disaster Management | | | |
| 2 | Understand the vulnerability of ecosystem and infrastructure due to a disaster | | | |
| 3 | Acquire the knowledge of Disaster Management Phases | | | |
| 4 | Understand the hazard and vulnerability profile of India | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) NANO TECHNOLOGY (B18ME25) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the fundamentals of Nanotechnology | | | |
| 2 | Know the different classes of nano materials | | | |
| 3 | Impart basic knowledge on various synthesis and characterization techniques involved in Nanotechnology | | | |
| 4 | Make the learner familiarize with nanotechnology potentialities. | | | |
| 5 | Apply transfer interdisciplinary systems engineering approaches to the field of nanotechnology. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) MECHATRONICS (PROFESSIONAL ELECTIVE-I) (B18ME26) | No. of Hours L:3 T:0 P:0 | Credits:3 |

| After completion of this course, the student shall be/shall | | | | |
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| 1 | Use the control system; mechatronics design systems and measurement systems. | | | |
| 2 | Work on various actuating systems. | | | |
| 3 | Convert the signals from one form to another form. | | | |
| 4 | Estimate the micro controllers and micro processors. | | | |
| 5 | Develop the simple programming code for PLC's. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) AUTOMOBILE ENGINEERING (PROFESSIONAL ELECTIVE-I) (B18ME27) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the various parts used in automotive pollution standards. | | | |
| 2 | Understand different types of fuel injection system and pump system. | | | |
| 3 | Analyze the cooling systems depending upon the cooling requirements for particular automobile and Understand different types of ignition systems used in case of an automobile. | | | |
| 4 | Understand the power transmission in automobile gearbox and clutch system. | | | |
| 5 | Understand various transmission systems, steering systems and suspension and breaking systems. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) MAINTENANCE AND SAFETY ENGINEERING (PROFESSIONAL ELECTIVE-II) (B18ME28) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand The maintenance in equipment life cycle. | | | |
| 2 | Analyse The preventive and corrective measures in maintenance. | | | |
| 3 | Estimate The inventory control in maintenance. | | | |
| 4 | Classify The incosting and budget preparation | | | |
| 5 | Compare the reliability measures, reliability networks and reliability analysis | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) MECHANICS OF COMPOSITE MATERIALS (PROFESSIONAL ELECTIVE-II) (B18ME29) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Highlight the appropriate use of composite materials in the industry | | | |
| 2 | Understand the significance of replacing existing metal structures with composite materials whenever beneficial. | | | |
| 3 | Comprehend the complexity of design of composite materials and structures. | | | |
| 4 | Apply knowledge of mechanics of composite materials for analyzing advanced materials | | | |

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| | involved in current trends and research area. | | | |
| 5 | Apply the knowledge of composite materials for designing structures for aerospace applications and smart structures. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) REFRIGERATION & AIR CONDITIONING (PROFESSIONAL ELECTIVE-II) (B18ME30) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand all the basic principles of refrigeration. | | | |
| 2 | Prepare a model refrigeration system and designing various components according to the requirement. | | | |
| 3 | Design an A.C. unit by calculating the heat loads. | | | |
| 4 | 4. Observe and analyze large capacity units like ice plants, cold storages and central A.C. units. | | | |
| 5 | Know all Psychrometric properties and processes. | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) HEAT TRANSFER LAB (B18ME31) | No. of Hours L:0 T:0 P:3 | Credits:1.5 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Student is able to analyze and conduct the experiments to know the heat transfer and temperatures. | | | |
| 2 | Student is able to interpret the experimental knowledge in the real life situation like in, electric iron, and refrigerator. | | | |
| 3 | Student is able to possess the application knowledge of engine radiation, air condition chambers, solar collectors etc. | | | |
| 4 | Student can design a heat transfer system to cool the given component to required temperature within the desired time | | | |
| Course Outcome | Year /Semester III/ II Sem | Subject Name (Subject Code) ADVANCED ENGLISH COMMUNICATION SKILLS LAB (B18EN03) | No. of Hours L:0 T:0 P:3 | Credits:2 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Developing effectively and appropriate vocabulary to be used contextually. | | | |
| 2 | Inculcating flair for Writing and felicity in written expression. | | | |
| 3 | Enhancing job prospects. | | | |
| 4 | Acquiring effective speaking abilities. | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) CAD/CAM (B18ME32) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Observe the various input and output devices used in CAD/CAM systems. | | | |
| 2 | Understand 2D and 3D transformations problems . | | | |
| 3 | Write the programs for different models by using NC part programming. | | | |

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| 4 | Analyze the Group Technology (GT) | | | |
| 5 | Differentiate CAQC (Computer Aided Quality Control) and CIM (Computer Integrated Manufacturing) systems. | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) INSTRUMENTATION AND CONTROL SYSTEMS (B18ME33) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Gain knowledge on various parts of machine and IC engine. Understand the design construction of machine parts. | | | |
| 2 | To gain knowledge of functioning of parts such as connecting rod, eccentric etc. | | | |
| 3 | To understand how heat and electricity are combined in calibrating thermoelectric devices, especially resistance temperature detector, thermo couple. | | | |
| 4 | To measure the displacement using LVDT transducer. To gain knowledge on flow measurement using rotameter. | | | |
| 5 | Classify Open and closed systems Servomechanisms. | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) UNCONVENTIONAL MACHINING PROCESSES (PROFESSIONAL ELECTIVE-III) (B18ME34) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand selection of processes. | | | |
| 2 | Design the components of Abrasive Jet machining process. | | | |
| 3 | Observe surface properties after machining without destructing the material. | | | |
| 4 | Select the material with respect to process. | | | |
| 5 | Apply plasma for machining like Magnetic abrasive finishing, Abrasive flow finishing etc., | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) DESIGN FOR MANUFACTURING (PROFESSIONAL ELECTIVE-III) (B18ME35) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Classify the steps in design process. | | | |
| 2 | Understand the overview of various machining processes. | | | |
| 3 | Apply the factors in design of weldments. | | | |
| 4 | Analyse general design recommendations of extrusion. | | | |
| 5 | Compare the development of systematic dfa methodology. | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) POWER PLANT ENGINEERING (PROFESSIONAL ELECTIVE-III) (B18ME36) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Understand the different types of operation takes place in the power plant with its | | | |

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| | plant layout. | | | |
| 2 | Got knowledge about internal combustion power plants and their uses. | | | |
| 3 | Explore the opportunities to improve the capacity and the efficiency of hydro electric power plant. | | | |
| 4 | Understand the concept of nuclear power generation and find out the better way against radiation hazards. | | | |
| 5 | Analyze the plant economics and the environmental considerations for the establishment of plant. | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) PRODUCTION PLANNING & CONTROL (PROFESSIONAL ELECTIVE-IV) (B18ME37) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Design and plan an economical production system. | | | |
| 2 | Learn about effective utilization of plant resources. | | | |
| 3 | Provide alternate production strategies. | | | |
| 4 | Guide shop floor people for manufacturing products of required quantity. | | | |
| 5 | Define dispatcher and its procedures. | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) ROBOTICS (PROFESSIONAL ELECTIVE-IV) (B18ME38) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply the knowledge of robotics in real time human life applications | | | |
| 2 | Analyse the concept of CAD/CAM and automation to the robotics. | | | |
| 3 | Compare knowledge of robot applications in manufacturing like, material handling, loading and unloading etc. | | | |
| 4 | Experiment the robotics to the spot and continuous arc welding and spray painting. | | | |
| 5 | Relate the Robot Application in Manufacturing. | | | |
| Course Outcome | Year /Semester IV / I Sem | Subject Name (Subject Code) COMPUTATIONAL FLUID DYNAMIC S (PROFESSIONAL ELECTIVE-IV) (B18ME39) | No. of Hours L:3 T:0 P:0 | Credits:3 |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Describe Governing equations of CFD. | | | |
| 2 | Analyze problems with Euler and Navier Stokes Eqns. | | | |
| 3 | Evaluate CFD codes. | | | |
| 4 | Analyze different models with different algorithms. | | | |
| 5 | Understand Finite volume formulations for diffusion equation. | | | |

| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
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| | IV / I Sem | AUTOMATION IN MANUFACTURING (PROFESSIONAL ELECTIVE-V) (B18ME40) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Analyse necessity of automating any industry and procedure to be adopted for automation. | | | |
| 2 | Define different types of automated flow lines, transfer lines. | | | |
| 3 | Associate all types of material handling systems and adaptive control systems. | | | |
| 4 | Choose packages available for advanced techniques available in mechanical engineering. | | | |
| 5 | Discuss the Techniques of Rapid Proto typing. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
| | IV / I Sem | MECHANICAL VIBRATIONS (PROFESSIONAL ELECTIVE-V) (B18ME41) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Students acquire the ability to format mathematical models of problems in vibrations systems (damped & undamped subjected to non periodic forcing functions). | | | |
| 2 | Students will have an ability to obtain the complete solution for the motion of vibrator. | | | |
| 3 | Students will be able to obtain design parameters and indicate methods of solutions for complicated vibratory problems. | | | |
| 4 | Students will be able to solve the vibrations problems for multi degrees of freedom. | | | |
| 5 | Students will be able to obtain numerical solutions in vibrations problems. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
| | IV / I Sem | NON CONVENTIONAL ENERGY SOURCES (PROFESSIONAL ELECTIVE V) (B18ME42) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Apply the technology to capture the energy from the renewable sources like sun, Wind, ocean, biomass, geothermal. | | | |
| 2 | Use different renewable energy sources to produce electrical power minimize the use of conventional energy sources to produce electrical energy. | | | |
| 3 | Identify the fact that the conventional energy resources are depleted. | | | |
| 4 | Understand direct energy conversion. | | | |
| 5 | Learn different methods in solar energy system. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:1.5 |
| | IV / I Sem | CAD/CAM LAB (B18ME43) | L:0 T:0 P:3 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Draw the part drawings which are utilized in real time applications. | | | |
| 2 | Understand the different types of stress analysis, load calculations by using ANSYS | | | |

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| | software. | | | |
| 3 | Analyze 2D and 3D part drawings using AutoCAD, CREO software packages. | | | |
| 4 | Develop and understand the NC part program generation by using CADEM packages. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:1.5 |
| | IV / I Sem | INSTRUMENTATION AND CONTROL SYSTEMS LAB (B18ME44) | L:0 T:0 P:3 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Identify the different pressure gauges. | | | |
| 2 | Understand the different types of temperature measurements. | | | |
| 3 | Analyze the calibration of capacitive transducer for angular displacement. | | | |
| 4 | Evaluate seismic pickup for the measurement of vibration amplitude. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
| | IV / II Sem | INTELLECTUAL PROPERTY RIGHTS (OPEN ELECTIVE-I) (B18MB06) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | An ability to apply knowledge of mathematics, science and engineering to real world problem. | | | |
| 2 | Ability to model, understand and develop complex software for system software as well as application software. | | | |
| 3 | The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts. | | | |
| 4 | A recognition of the need for, and an ability to engage in life-long learning. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:4 |
| | IV / II Sem | AIR POLLUTION AND CONTROL (OPEN ELECTIVE) (B18CE53) | L:4 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Acquire the knowledge of Air pollution Concepts. | | | |
| 2 | Acquire the knowledge of Effects of air pollution. | | | |
| 3 | Acquire the knowledge of Air pollution Control devices. | | | |
| 4 | Acquire the knowledge of Air quality monitoring devices. | | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
| | IV / II Sem | STATISTICAL OPERATIONS RESEARCH (OPEN ELECTIVE-III) (B18MA07) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | Find optimum solutions by various techniques of Linear Programming Problem. | | | |
| 2 | Analyze the optimum expenditure of the products by Transportation Problem. | | | |
| 3 | Find out the optimum allocation and time of the tasks. | | | |
| 4 | Examine the graphical solution of a game theory problems. | | | |
| 5 | Formulate concrete problems using Queuing theoretical approaches and gain strong knowledge and principles of Queuing Theory. | | | |

| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
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| | IV / II Sem | PLANT LAYOUT & MATERIAL HANDLING (PROFESSIONAL ELECTIVE – VI) (B18ME47) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | | Get the knowledge of various types of material handling systems. | | |
| 2 | | Understand applications of different types of plant layouts. | | |
| 3 | | Get the knowledge of applications of ergonomics in material handling. | | |
| 4 | | Get the knowledge of designing of cost effective material handling systems. | | |
| 5 | | Understand merits of different types of plant layouts. | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
| | IV / II Sem | CNC TECHNOLOGIES (PROFESSIONAL ELECTIVE – VI) (B18ME48) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | | Understand the basic procedures and concepts of programming, set up and operation of a CNC Machining Center. | | |
| 2 | | Identify and understand the basic programming codes. | | |
| 3 | | Create geometry and tool paths from the specifications on a blueprint for simple parts using Master cam programming software. | | |
| 4 | | Identify and define the functions of the CNC machine control. | | |
| 5 | | Analyze the CNC machining center for manufacturing simple parts. | | |
| Course Outcome | Year /Semester | Subject Name (Subject Code) | No. of Hours | Credits:3 |
| | IV / II Sem | JET PROPULSION & ROCKET ENGINEERING (PROFESSIONAL ELECTIVE – VI) (B18ME49) | L:3 T:0 P:0 | |
| After completion of this course, the student shall be/shall | | | | |
| 1 | | Compare the characteristics & performance of aerospace propulsion systems. | | |
| 2 | | Estimate their Performance and behavior of ramjets. | | |
| 3 | | Analyze preliminary designs of rocket to meet specified requirements. | | |
| 4 | | Identify testing and instrumentation methods for cryogenics like nuclear and plasma and propulsion. | | |
| 5 | | Understand the fundamentals of turbojet, ramjet and their performance evaluation. | | |