Mechanical Engineering

II B.Tech I Semester

(13A54301) MATHEMATICS-II

CO1	Determine the Rank , Echelon form, normal form
CO2	Apply Cayley – Hamilton Theorem
CO3	solve of Algebraic and Transcendental Equations
CO4	Apply various interpolation techniques
CO5	Apply the method of least squares to fit Second degree curve, exponentional curve, Power curve
CO6	Apply Numerical Differentiation and Integration Rules
CO7	Apply Fourier Series and Fourier integral theorem
CO8	Apply partial differential equations by elimination of arbitrary constants and arbitrary functions

(13A01308)MECHANICS OF SOLIDS

CO1	Understand the concepts of the strength of materials based on calculating stresses, strain and deformations
CO2	Apply the shear force and bending moment diagrams for calculating maximum shear force and bending moment for different types of beams
CO3	Apply the strength of beams with different sections about bending stress and shear stress
CO4	Apply to calculate the shear strength of the solid and hollow shafts subjected to torsional loading
CO5	Apply to calculate deflection of beams using different methods under different boundary and loading conditions
CO6	Understand to calculate different stresses and strains for the thin and thick cylinders
CO7	Apply safe design to calculate the boiler shells and thick shells
CO8	Understand the concept of deflection of closed and open coil helical springs under axial pull and axial couple

(13A99302)ELECTRICAL ENGINEERING AND ELECTRONICS ENGINEERING

CO1 Define ohm's Law in Electrical Circuits, b Kirchoff's laws, Star-delta and delta-star transformations

CO2 Explain the principle of operation of DC Generator, DC motor types, and operation of three point starter.

CO3 Explain the principle of operation of single phase Transformers, and its losses.

CO4 Explain the principle of operation of alternators, its characteristics and principle of operation of induction motor, its characteristics.

CO5 Explain semiconductor physics of the intrinsic, p and n materials, Characteristics of the p-n junction diode, diode's application in electronic circuits.

CO6 Explain the characteristics of BJT , basic transistor amplifier circuit, condition for Oscillators, and characteristics and applications of SCR.

CO7 Explain about Induction Heating, Dielectric heating and Ultrasonic generation and their applications.

CO8 Explain about Cathode Ray Oscilloscope and applications.

(13A03301)MATERIAL SCIENCE AND ENGINEERING

CO1 Understand the process of finding the grain size

CO2 Remember types of solid solutions

CO3 Apply Plotting of equilibrium diagrams.

CO4 Understand the type of microstructure and their properties.

CO5 Understand the concept of heat treatment process.

CO6 Understand the type of nonferrous microstructure and their properties.

CO7 Remember the ceramic materials

CO8 Remember the advantage of composite materials

(13A03302)THERMODYNAMICS

CO1 Understand the concept of temperature, heat and work

CO2 Understand the concept of first law and PMM 1 and PMM2

CO3 Understand the method phase equilibrium diagrams

CO4 Apply thermodynamics basic concepts for ideal gases

CO5 Apply thermodynamics basic concepts for mixture of perfect gases

CO6 Understand the psychrometry

CO7 Apply the thermodynamic concepts of power cycles

CO8 Apply the thermodynamic concepts of power cycles

(13A03303) MACHINE DRAWING

CO1 Draw the Machine Drawing Conventions

CO2 Draw the Machine Elements and simple parts

CO3 Draw the assembled views for the part drawings of the Engine parts

CO4 Draw the assembled views for the part drawings of the Other machine parts – Screws jacks, Machine Vices Plummer block, Tailstock.

CO5 Draw the assembled views for the part drawings of the Valves

(13A99303)MATERIAL SCIENCE LAB AND MECHANICS OF SOLIDS LAB

CO1 Prepare and study of the Micro structure of pure metals like Iron,Cu,and Al.

CO2 Identify the metal by study the Micro structure of Cast Irons.

CO3 Study the Micro structure of Heat treated steels.

CO4 Determine the hardness of various treated and untreated steels.

CO5 Calculate Bending Movement and analyse the Bending Movement on the Simple supported beam by Bending test.

CO6 Calculate Tensional Movement.

CO7 Determine the compression strength of cube.

CO8 Determine the impact strength by impact test

(13A99304)ELECTRICAL ENGG AND ELECTRONICS ENGG LAB

CO1 Calculate the efficiency of DC motor by conducting Brake test and Swinburne's test.

CO2 Determine the losses by conducting OC and SC tests on Single phase Transformer.

CO3 Determine the efficiency of three phase induction motor.

CO4 Calculate the Regulation of Alternator by using synchronous impedance method.

CO5 Calculate the voltage, Frequency and Phase of periodic signals by using CRO.

CO6 Determine the V-I characteristics of PN junction diode.

CO7 Calculate the ripple factor and efficiency of Full wave rectifier with and without filter.

CO8 Find the Input and output characteristics of Common Emitter (CE) Configuration and Frequency response of a single stage CE amplifier.

(13A52301)HVPE

CO1 Understand the engineering ethics and its senses.

CO2 Define how Engineering As Social Experimentation

CO3 Understand Engineers Responsibility For Safety and risk

CO4 Define Responsibilities And Rights

CO5 Understand The Global Issues

II B.Tech II Semester

(13A01403)ENVIRONMENTAL SCIENCE

CO1 Understand the importance of Multidisciplinary nature of environmental studies

CO2 Classify the natural resources and their importance

CO3 Understand the concept of Eco system and their classification

CO4 Interpret the Bio-diversity and its conservation

CO5 Define the causes and effects of Environmental pollution and solid waste management

CO6 Explain the Social issues, environment and case studies about the public awareness

CO7 Understand the role of population growth, family welfare programmes

CO8 Summarize the field work

(13A54303)PROBABLITY & STATISTICS

CO1 Apply the concept of probability and apply the conditions to the related problems.

CO2 Apply the concept of the mean & variance of the random variables and related problems

CO3 Apply the concept of mean , variance of the distributions and its problems

CO4 Apply the concept of samples and populations related problems.

CO5 Apply the concept of the point, interval and Bayesian Estimation and its problems

CO6 Apply the test of hypothesis and related problems.

CO7 Apply the concept of Test of significance to the related problems

CO8 Apply the concept of queuing theory to general life

(13A03401)KINEMATICS OF MACHINERY

CO1 Understand different mechanisms

CO2 Understand the mechanism of hookes joint, steering Mechanisms and belt friction and solve numerical problems.

CO3 Draw velocity and acceleration diagrams of simple plane mechanisms.

CO4 Understand gears terminology, types of gears, length of path of contact, contact ratio and interference in gears.

CO5 Design the gears to avoid interference and to calculate train value for different gear trains

CO6 Draw displacement diagram and cam profile for different types of motions of the follower.

CO7 Apply displacement, velocity and acceleration of the follower at different positions of cam with specified contours.

CO8 Understand different mechanisms

(13A03402)THERMAL ENGINEERING –I

CO1 Understand the working principle of two stroke and four stroke I.C engines and its components.

CO2 Understand and apply the thermodynamic concepts in I.C engines, Valve and Port Timing Diagrams.

CO3 Understand the fuel supply systems, cooling, lubrication and ignition systems.

CO4 Understand how auxiliary systems play key role in increasing the performance of an I.C engine.

CO5 Understand stages of combustion in S.I and C.I engines, flame propagation.

CO6 Understand the knocking phenomenon and importance of combustion chamber design.

CO7 Understand the methods to increase the engine performance and formulate engine performance parameters.

CO8 Understand Working of reciprocating and rotary air compressors, multistage compression, inter- cooling concept.

(13A01408)MECHANICS OF FLUIDS

CO1 Understand fundamental fluid properties and their engineering significance.

CO2 Apply concepts of fluid properties, Hydrostatic law and Pascal’s law to static fluid problems including manometers.

CO3 Understand the fundamentals of fluid flow and its description.

CO4 Apply Bernoulli's theorem for fluid flow problems.

CO5 Compute the major and minor losses for fluid flow through pipes and the conditions governing them.

CO6 Determine the Flow rate using Venturimeter, Orifice meter, Flow nozzle, Pitot tube and Turbine flow meter.

CO7 Apply the various concepts of boundary layer theory for nominal, displacement, momentum and energy thickness

CO8 Determine the effect of Drag and lift forces on flat plate, sphere, cylinder and airfoil.

(13A03403)MANUFACTURING TECHNOLOGY

CO1 Understand the elements of casting, construction of patterns and gating systems

CO2 Understand moulds, methods of molding, molding machines and solidification of castings of various metals.

CO3 Understand the different types of special casting methods and their applications, function of risers and feeding systems.

CO4 Understand different types of furnaces and steel making process

CO5 Understand the different types of welding processes and characteristics, cutting of ferrous and non-ferrous metals by various methods

CO6 Understand about advanced welding process, heat affected zone(HAZ), Defects and Identification Methods

CO7 Understand the concepts of metal working processes, types of metal working process.

CO8 Understand the concepts of unconventional machining process, types of unconventional machining process, concepts os rapid prototyping

(13A03404)THERMAL ENGINEERING LAB

CO1 Understand Valve / Port Timing Diagrams of an I.C. Engines and Dismantling / Assembly of Engines.

CO2 Apply Performance Test on a 4 -Stroke Diesel Engines

CO3 Apply Performance Test on 2-Stroke Petrol engine

CO4 ApplyEvaluation of Engine friction by conducting Morse test on 4-Stroke Multi cylinder Engine

CO5 Apply Retardation and motoring test on 4- stroke engine

CO6 Apply Heat Balance of an I.C. Engine.

CO7 Apply Air/Fuel Ratio and Volumetric Efficiency of an I.C. Engines.

CO8 Apply Performance Test on Reciprocating Air – Compressor Unit

(13A03405)MANUFACTURING TECHNOLOGY LAB

CO1 Carry out Pattern preparation

CO2 Estimate the Sand properties

CO3 Carry out the Casting process to produce Object

CO4 Carry out the Welding process to join the components

CO5 Carry out Blanking & Piercing operation

CO6 Carry out the Moulding operation

III B.Tech I Semester

(13A03501)HYDRAULIC MACHINERY

CO1 Understand concept and working of Hydro electric power stations

CO2 Understand different types of Hydraulic power plants

CO3 Understand about the different cases of impact of jet on vanes

CO4 Draw the velocity triangles and analyse the same to arrive at the required quantities

CO5 Understand the working principle of different types of Turbines

CO6 Calculate the different quantities used for predicting the behavior and performance of turbines

CO7 Understand the various types and purposes of hydraulic pumps

CO8 Draw indicator diagrams and find the work done by pumps

(13A03502)THERMAL ENGINEERING-II

CO1 Understand the concept of rankine cycle and calculate efficiency enhancement

methods.

CO2 Understand the working of boilers, mountings and accessories and calculate boiler efficiency, chimney height for maximum Discharge

CO3 Understand the use of nozzle for steam flow and calculate Critical pressure ratio, maximum discharge and areas of nozzle.

CO4 Understand the working of impulse turbine Construct the velocity triangle and calculate power developed.

CO5 Understand the working of reaction turbine Construct the velocity triangle and calculate power developed

CO6 Understand the function of condenser and calculate condenser efficiency.

CO7 Understand the basic components of a gas turbine and calculate the power generation.

CO8 Understand the various propulsive devices and calculate the power generation using Joule Cycle.

(13A03503)DYNAMICS OF MACHINERY

CO1 Apply the concepts of friction in pivots and collars with uniform pressure and uniform wear to solve the problems in pivots and collars

CO2 Apply the concepts of clutches, breaks and dynamometers to solve the problems on clutches, breaks and dynamometers.

CO3 Apply the gyroscopic principles and concepts on aeroplanes, ships, four wheel and two wheel vehicles

CO4 Construct the turning moment diagrams for connecting rod, crank.

CO5 Design the flywheel for IC engines

CO6 Apply the concepts related to governors, forces acting on the governors to solve problems on different governors.

CO7 Solve the problems of rotating and reciprocating masses.

CO8 Calculate the frequencies of free longitudinal, transverse and torsional vibrations for different vibration systems.

(13A03504)METAL FORMING PROCESSES

CO1 To understand the basic concept on one, two and three dimensional stress analysis.

CO2 To understand the theory of plasticity, strain hardening, hot and cold working process.

CO3 To understand the principles of rolling, their applications and defects.

CO4 To understand the principles of forging, their applications and defects.

CO5 To understand the fundamentals of extrusion and wire drawing process and their industrial applications.

CO6 To understand the various press working processes, their advantages and disadvantages.

CO7 To understand the concept of plastic manufacturing process and its applications.

CO8 To understand the concept of rapid manufacturing process and its applications.

(13A03504)DESIGN OF MACHINE MEMBERS – I

CO1 Under Stand General considerations of design, design process

CO2 apply design procedures using theories of failure for different elements

CO3 design simple components under cyclic loading using Goodman‟s and Soderberg‟s criterions

CO4 design riveted joints with different configuration, boiler shell joint design and eccentric loading design of riveted joints

CO5 Design bolted joints with direct loading and eccentric loading

CO6 design cotter joint, knuckle joint

CO7 Design of solid and hollow shafts for strength and rigidity

CO8 design various rigid and flexible shaft couplings

(13A03506)HEAT TRANSFER

CO1 Understand concept of heat transfer and determine conduction heat transfer.

CO2 Determine steady, un steady state and extended surfaces heat transfer and its applications.

CO3 Understand transient heat conduction and formulate practical conduction heat transfer problems

CO4 Determine the convective heat transfer on fluids

CO5 Formulate and understand practical forced and natural convection heat transfer.

CO6 Calculate heat transfer in condensation and boiling systems, turbulent and laminar film condensation.

CO7 Understand heat exchangers and its applications..

CO8 Understand the laws of radioactive heat transfer and determine shape factor for different geometries.

(13A03507)HEAT TRANSFER LAB

CO1 Deter mine thermal conductivity of insulating powder material and lagged pipe apparatus.

CO2 determine Overall heat transfer co-efficient through Composite Slab Apparatus

CO3 Determine Thermal Conductivity of metal (conductor).

CO4 Determine Heat transfer in pin-fin

CO5 Calculate Heat transfer coefficient in forced convection

CO6 Calculate Heat transfer coefficient in natural convection

CO7 Compute LMTD and overall heat transfer coefficient in Parallel and counter flow heat exchanger.

CO8 Determine Emissivity of a gray body through Emissivity apparatus and Stefan apparatus

(13A03508)FLUID MECHANICS AND HYDRAULIC MACHINERY LAB

CO1 Determine the Impact of jet on vanes

CO2 Determine the Performance of Turbines.

CO3 Determine the Performance of Centrifugal Pump.

CO4 Determine the flow rate using Venturimeter.

CO5 Determine the Performance of Reciprocating Pump.

CO6 Determine the flow rate using Orifice meter

CO7 Determination of friction factor for a given pipe line.

CO8 Determination of loss of head due to sudden contraction in a pipeline.

III B.Tech II Semester

(13A52501)MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

CO1 Understand the concepts of demand analysis for the market products and services with respect to prices

CO2 Apply concepts of production function in long run and short run production cost

for fixing price of the product

CO3 Apply cost concepts of Break-Even analysis to identify profit earning point

CO4 Understand the types of markets and its structures for price output decisions

CO5 Apply the concepts of capital budgeting techniques to evaluate project's return and feasibility for accepting the projects.

CO6 Understand the concepts of double entry system principles in recording the business transactions in the books of accounts

CO7 Apply the tools and techniques of financial statement analysis to evaluate the financial performance of an organization

CO8 Under stand the problem on Net work analysis

(13A03601) CAD/CAM

CO1 Understand the various computer devices and their use in Industrial Manufacturing

CO2 Understand the Computer Graphics techniques and control commands.

CO3 Understand the Geometric representation methods.

CO4 Understand and apply Numerical CNC Part Programming methods.

CO5 Explain production flow analysis in Computer Aided Processes Planning

CO6 Explain the manufacturing system types

CO7 Explain the Computer integrated production planning

CO8 Understand the concept of Computer Aided Quality Control

(13A03602)MACHINE TOOLS

CO1 Understand the treatment of metal cutting theory

CO2 Understand different types of Lathes

CO3 Understand about Shaping, Slotting and Planning Machines

CO4 Understand Principles and working of Drilling and Boring machines

CO5 Understand Principles and working of different Milling machines

CO6 Understand different types of Grinding Machines

CO7 Understand about Lapping, Honing and Broaching Machines

CO8 Understand the principles, Classification and design of Jigs and Fixtures and their Applications

(13A03603)REFRIGERATION AND AIRCONDITIONING

CO1 Understand the basic principles of Refrigeration and know the aspects of various refrigeration methods.

CO2 Determine the purpose and function of each of the components in the domestic refrigerator and known to new refrigerants.

CO3 Understand different types of Refrigerants and global warming

CO4 Determine the vapour absorption refrigeration system.

CO5 Apply refrigeration knowledge on latest developments of Electrolux, thermo electric vortex tube methods

CO6 Apply knowledge on the use of psychometric terms in Air conditioning.

CO7 Calculate the sensible heat load and latent heat load to all types of domestic, commercial and industrial systems.

CO8 Determine A/C system base on human comfort.

(13A03604)DESIGN OF MACHINE MEMBERS-II

CO1 Design journal bearings, ball bearings and roller bearings and to know the advantages of rolling contact bearings against sliding contact bearings

CO2 Determine forces acting on cylinders and cylinder liners and analyze stress acting on the components

CO3 Understand the concept of the crank shaft &connecting rod.

CO4 Understand the of design crane hooks, C-clamps and various belt, rope and chain drives

CO5 Determine the design flat belt drive and V belt drives different practical application conditions.

CO6 Understand the concept of the gear terminology and types of gears

CO7 Understand the concept of types of springs and calculate the energy stored in spring

CO8 Understand the types of various types of screw threads for assembly of mating components

(13A03605)NON CONVENTIONAL ENERGY SOURCES

CO1 Understand the various renewable energy sources.

CO2 Understand and the principles of solar radiation and environmental impact of solar

power.

CO3 Understand the concept of solar energy collection and classification.

CO4 Understand the concept of solar energy storage and its applications

CO5 Understand the concept of the wind energy and bio-mass and their utilization.

CO6 Understand the concept of Geo-thermal energy, methods of harnessing the energy

CO7 Understand the concept of ocean energy, potential and conversion techniques.

CO8 Understand the concept of the Direct energy conversions

(13A03608)CAD LAB

CO1 2D Drawing using AutoCAD Software with the help of AutoCAD commands

CO2 3D Drawing using CATIA V5 Software with the help of different workbenches like Sketcher, Part, etc.,

CO3 Assembly of 3D components knuckle joint, stuffing box.

(13A03609)MACHINE TOOLS LAB

CO1 Perform the various operations on lathe

CO2 Perform the drilling and tapping operations using drilling machine

CO3 Perform shaping and planning operations

CO4 Perform slotting operation

CO5 Perform gear cutting operation on milling machine

CO6 Perform the grinding operation on different grinding machines

IV B.Tech I Semester

(13A03701)OPERATIONS RESEARCH

CO1 Understand the characteristics and phases, types of models, allocation in linear programming

CO2 Apply the concept of optimal solution, unbalanced problem, degeneracy and Transportation problem & sequencing.

CO3 Understand the concept of replacement of items and related problems.

CO4 Apply the concept of theory of games related problems.

CO5 Apply the concept of the knowledge of queuing models.

CO6 Apply the concept of the inventory management models.

CO7 Apply the knowledge of dynamic programming.

CO8 Understand the concept of the simulation and simulation languages.

(13A03702)AUTOMATION AND ROBOTICS

CO1 State the working principles of automation its needs, levels, hardware components and its process controls.

CO2 Describe the Automated flows using part transfer mechanisms with, without buffer storage.

CO3 Calculate the assembly line balancing using number of balancing & flexible assembly lines.

CO4 freedom, components, Describe the classification, configurations, degrees of types of arms, joints of industrial robots.

CO5 Apply Homogeneous transformations matrix for rotation, translation, manipulator kinematics & dynamics of industrial robots.

CO6 Compute the trajectory planning, path planning & software package of robot programming.

CO7 Describe the actuators, sensors, encoders, used in robots.

CO8 **Describe the robot application in manufacturing units to transfer materials, loading, unloading , continuous welding , Spray painting, assembly & inspections**

(13A03703)FINITE ELEMENT METHODS

CO1 Apply the concept of discrete elements in a structure and stress strain analysis and solve problems.

CO2 Apply the concept of global stiffness matrix,development of truss equations,and galerkins residual methods and solve problems.

CO3 Apply the concept of beam quations.and solve problems.

CO4 Apply the concept of frames,planestress and strain equations and solve problems.

CO5 apply the concept of linear strain elements,axisymmetric elements and isoparametric elements and solve problems.

CO6 Apply heat and mass transfer of conduction, convection process in finite element

CO7 Apply fluid flow and thermal stress analysis in one dimensional and two dimensional finite element formulation and solve problems.

CO8 Apply structural dynamic and time dependent heat transfer on bars and trusses and axisymmerric elements and solve problems.

(13A03704)METROLOGY AND MEASUREMENTS

CO1 Understand the Limits ,Fits, Interchange ability and Selective assembly

CO2 Understand the Linear Measurement, Angular Measurement, Optical measuring Instruments

CO3 Understand the concepts of surface roughness and different types of comparators, screw thread measurement, surface roughness processes

CO4 Understand the concepts of gear measurements and coordinate measuring machines

CO5 Apply the concepts of alignment test on machines

CO6 Understand the basic principles of measurement instrumentation,working of transducers Tachometers

CO7 Understand the basic principles of Stress strain measurement, Vibrations and acceleration measuring instruments.

CO8 Understand the basic principles of pressure, temperature, Force, Torque and Power measuring Instruments

(13A03705)AUTOMOBILE ENGINEERING

CO1 Understand the Components of a four wheeler automobile system.

CO2 Understand the concepts of fuel supply systems in S.I. Engine and CI engine.

CO3 Understand the various cooling and ignition systems.

CO4 Understand the National and international Pollution standards.

CO5 Understand the various electrical accessories in automobile.

CO6 Understand the power transmission.

CO7 Understand the Steering concepts and mechanisms.

CO8 Understand the various suspension and brake systems.

(13A03708)PRODUCTION AND OPERATIONS MANAGEMENT

CO1 Understand the productivity and productivity measurement.

CO2 Understand the concept the forecasting and importance of forecasting.

CO3 Design the plant layout by computerised methods:ALDEP,CRAFT,CORELAP

CO4 Determine strategies for aggregate planning and aggregate planning using O.R.

Models.

CO5 Understand the concept of inventory management skills

CO6 Understand the concept of the scheduling policies-techniques.

CO7 Understand the concept of knowledge MRP,ERP & LOB

CO8 Understand the concept of the knowledge Lean management, JIT,TQM, six sigma quality control.

IV B.TECH II SEM

(13A03801)Industrial Engineering

CO1 Understand the concept of Management and organization

CO2 Understand planning, coordinating, directing, controlling.

CO3 Understand the concept of plant and its location

CO4 Understand the concept of work study, method study and work sampling

CO5 Understand the objective and functions management and inventory

CO6 Apply the knowledge of mathematics, science and engineering to the solution to the complex engineering problem

CO7 Understand the concept of Inspection and quality control

CO8 Understand the concept Acceptance Sampling Plan, Quality circles

(13A03804)Power plant Engineering

CO1 Understand Introduction to the Sources of Energy – Resources and Development of Power in India.

CO2 Understand COMBUSTION PROCESS

CO3 Understand the DIESEL POWER PLANT

CO4 Understand HYDRO ELECTRIC POWER PLANT

CO5 Understand the POWER FROM NON-CONVENTIONAL SOURCES

CO6 Understand and its the applications POWER FROM NON-CONVENTIONAL SOURCES

CO7 Understand Introduction to the Sources of Energy – Resources and Development of Power in India.

CO8 Understand Combustion Process

(13A03807)Modern Manufacturing Methods

CO1 understand importance of non-traditional machining processes, features,

classifications and applications of non-traditional methods

CO2 Understand the processes of USM process parameters, application and limitations.

CO3 Understand the processes of AJM process parameters, application and limitations.

CO4 Understand the Electro-chemical process

CO5 Understand the types of thermal based metal removal processes

CO6 Understand and its the applications of electron beam and Laser beam in manufacturing

CO7 Understand and its the applications of Plasma Machining and Chemical Machining

CO8 Understand the principle of working, mechanism of metal removal in Magnetic abrasive finishing processes.

(13A03810)Technical Seminar

CO1 Collects the information on specialized topic.

CO2 Understanding the information on special topic.

CO3 Demonstrates the understanding of the specialized topic in the technical report.

CO4 Conveys the content of technical report in the seminar presentation.

CO5 Improved body language

CO6 Ethics

CO7 Language quality

CO8 Student attitude

(13A03811)Project Work

CO1 Understanding of professional and ethical responsibilities.

CO2 State the objectives to meet the needs in engineering, societal and environmental contexts.

CO3 Use of various engineering tools and techniques for necessary planning, analysis and design of engineering projects.

CO4 Carryout the research based methods to solve the complex problems and to engage life-long learning skills.

IV B. Tech R13 – II Sem Course Outcomes

(13A01802) ENVIRONMENTAL IMPACT ASSESMENT AND MANAGEMENT
MOOC-I

1. Perform a critical quality review of an EIA and EIS;
2. Structure the EIA working process considering the need for interdisciplinarity;
3. Perform the screening and scoping of an EIA, based on existing requirements, evaluate the impacts and draw meaningful conclusions from the results of the EIA;
4. Clarify the concept of EIA and its application in an international context to those involved in or affected by the EIA process;
5. Interpretate an EIA, present its conclusions and translate its conclusions into actions.

(13A01804) ADVANCED STRUCTURAL ENGINEERING
MOOC-II

1. Design of roof systems with reference to Indian standards
2. Design of water retaining and storage structures
3. Design of silos and chimneys

(13A01805) PRESTRESSED CONCRETE
MOOC-III

1. Analyse the principles of prestressing along with their advantages and limitations.
2. Analyse the different methods and systems of prestressing.
3. Analyse the short term and long term losses in prestress
4. Analyse the fundamental concepts, techniques in analysis and design of prestressed members for flexure.
5. Analyse the fundamental concepts, techniques in analysis and design prestressed members for shear.
6. Analyse the general design cosideration in composite sections
7. Analyse the different types of deflections and its causes in prestressed members