



Nimra College of Engineering & Technology

Estd. By Nimra Educational Society (A Muslim Minority Society)
 Affiliated to JNTUK, Approved by AICTE, New Delhi, Permitted by Govt. of A.P.
 Nimra Nagar, Ibrahimpatnam, Vijayawada - 521 456, Krishna Dt., A.P., India.
 Ph : +91-866-2882010, Fax : +91-866-2881852
 e-mail : principal_nimra@yahoo.co.in website : <http://www.nimra.in>

B.TECH-MECHANICAL ENGINEERING

COURSE OUTCOMES FOR FIRST YEAR FIRST SEMESTER

COURSE TITLE WITH CODE	CO	STATEMENT
Calculus & Differential Equations (M-I) (R201101)	CO-1	To utilize mean value theorms to real life problems(L3)
	CO-2	To solve the differential equations related to various engineering fields(L3).
	CO-3	To familiarize with functions of several variables which is useful in
	CO-4	To apply double integration techniques in evaluating areas bounded by
	CO-5	To learn important tools of calculus in higher dimensions. Students will
Engineering Physics (R201103)	CO-1	To explain the need to coherent sources and the coordinates for sustained
	CO-2	To understand the basic concepts of LASER light sources(L2).
	CO-3	To explain the concept of dielectric constant and polarization in dielectric
	CO-4	To explain how sound is propogated in buildings (L2).
	CO-5	To classify various crystal systems (L2).
Programming for Problem Solving (R201110)	CO-1	To learn to write algorithms and to draw flow charts for solving problems.
	CO-2	To learn to convert flow charts/ algorithms to C programs
	CO-3	To use different operators, data types and write programs that use 2 way or
	CO-4	To select the best loop construct for a given problem.
	CO-5	To learn to design and implement programs to analyze the different pointer
	CO-6	To learn to decompose a problem into functions and to develop modular
	CO-7	To learn to apply file i/o operations.
Communicative English (R201102)	CO-1	To understand social or transactional dialogues spoken by native speakers of
	CO-2	To ask and answer general questions on familiar topics and introduce
	CO-3	To employee suitable strategies for skimming and scanning to get the general
	CO-4	To recognize paragraph structure and be able to match
	CO-5	To form sentences using proper grammatical structures and correct word
Programming for problem solving using C Lab (R201113)	CO-1	To gain knowledge on various concepts of C language
	CO-2	To draw flow charts and write algorithms.
	CO-3	To design and development of C problem solving skills.
	CO-4	To design and develop modular progrmming skills.
	CO-5	To trace and debug a program.
English Communications Skills Lab (R201106)	CO-1	To learn vowels, cosonants, prononciation, phonetic transcription etc.
	CO-2	To stressing compound words, rhythm, intonation, accent neutralization.
	CO-3	To listen to short audio texts and identify the context and specific pieces of
	CO-4	To understand and indentify key terms and structures useful for writing
COURSE OUTCOMES FOR FIRST YEAR SECOND SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT
Linear Algebra & Numerical Methods (M-II) (R201201)	CO-1	To develop the use of matrix algebra techniques that is needed by engineers
	CO-2	To solve system of linear algebraic equations using gauss eliminaion, gauss
	CO-3	To apply numerical integral techniques to different engineering problems.
	CO-4	To evaluate the approximate roots of polynomial and transcendental
	CO-5	To apply newtons forward and backward interpolation and lagranges formula
	CO-6	To learn different alorithms for approximating the solutions of ordinary

Engineering Chemistry (R201202)	CO-1	To analyze the different types of composite plastic materials and interpret the
	CO-2	To utilize the theory of construction of electrodes, batteries and fuel cells in
	CO-3	To synthesize nano materials for modern advances of engineering technology
	CO-4	To differentiate petroleum, petrol, synthetic petrol and have knowledge how
Engineering Mechanics (R201203)	CO-1	To draw free body diagrams for FBDs, for particles and rigid bodies in plane
	CO-2	To determine centroid for lines, areas and centre of gravity for volumes and
	CO-3	To determine area and mass moment of inertia for composite sections.
	CO-4	To analyze motion of particles and rigid bodies and apply the principles of
Basic Electrical and Electronics Engineering (R201220)	CO-1	To analyze various electrical networks.
	CO-2	To understand operation of DC Generators, 3 point starter and DC Machine
	CO-3	To analyze operation of half wave, full wave bridge rectifiers and OP-AMPS.
	CO-4	To understand operation of CE-amplifier and basic concept of feedback
Thermodynamics (R201254)	CO-1	To learn basic concepts of thermodynamics.
	CO-2	To learn laws of thermodynamics.
	CO-3	To learn concept of entropy.
	CO-4	To learn evaluation of properties of perfect gas mixtures.
Workshop Practice Lab (R201237)	CO-1	To learn usage of different tools of carpentry and making different shapes of
	CO-2	To learn usage of different tools of Tinsmithy and making different shapes of
	CO-3	To learn usage of different tools of Fitting and making different shapes of
	CO-4	To learn usage of different tools of House Wiring and making different
Engineering Chemistry Lab (R201116)	CO-1	To learn volumetric analysis, redox titrations with different indicators.
	CO-2	To learn EDTA titrations, methods of chemical analysis.
	CO-3	To learn use of commonly employed instruments.
	CO-4	To learn and able to acquire some experimental skills.
Basic Electrical and Electronics Engineering Lab (R201238)	CO-1	To compute the efficiency of DC shunt machine without actual loading of the
	CO-2	To estimate the efficiency and regulation at different load conditions.
	CO-3	To estimate power factor for single phase transformer with OC and SC tests.
	CO-4	To analyze the performance characteristics and to determine efficiency of DC
Constitution of India	CO-1	To understand the historical background of the constitution making and its
	CO-2	To understand the value of fundamental rights and duties for becoming good
	CO-3	To analyze the decentralization of power between central state and local self
	CO-4	To understand the functioning of three wings of the government that is
COURSE OUTCOMES FOR SECOND YEAR THIRD SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT
Vector Calculus, Fourier Transforms and PDE (M-III) (R2021011)	CO-1	To interpret the physical meaning of different operators such as gradient, curl
	CO-2	To estimate the work done against a field, circulation and flux using vector
	CO-3	To apply the Laplace transform for solving differential equations.
	CO-4	To find or compute the Fourier series of periodic signals.
Mechanics of Solids (R2021031)	CO-1	To model and analyze the behaviour of basic structural members subjected to
	CO-2	To understand and apply the concept of stress and strain to analyze and
	CO-3	To attain a deeper understanding of the loads, stresses and strains acting on a
	CO-4	To design and analysis of industrial components like pressure vessels.
Fluid Mechanics and Hydraulic Machines (R2021032)	CO-1	To learn basic concepts of fluid properties
	CO-2	To learn mechanics of fluids in static and dynamic conditions.
	CO-3	To learn boundary layer theory, flow separation and dimensional analysis.
	CO-4	To learn hydrodynamic forces of jet on vanes in different positions.
Production Technology (R2021033)	CO-1	To design the patterns and core boxes for metal casting processes.
	CO-2	To design the gating system for different metallic components.
	CO-3	To know the different types of manufacturing processes.
	CO-4	To use forging and extrusion processes.
Kinematics of	CO-1	To contrive a mechanism for a given plane motion with single degree of

Kinematics of Machinery (R2021034)	CO-2	To suggest and analyze the mechanism for a given straight line motion and
	CO-3	To analyze the motion of a plane mechanism
	CO-4	To select a power transmission system for a given application and analyze
Computer Aided Engineering Drawing Practice (R2021035)	CO-1	To work on sheet metal with the help of development of surfaces.
	CO-2	To understand how to know the hidden details of machine components with
	CO-3	To model commands for generating 2D and 3D objects using computer aided
Essence of Indian Traditional Knowledge (R2021039)	CO-1	To understand the concept of traditional knowledge and its importance.
	CO-2	To know the need and importance of protecting traditional knowledge.
	CO-3	To know the various enactments related to the protection of traditional
	CO-4	To understand the concepts of intellectual property to protect the traditional
COURSE OUTCOMES FOR SECOND YEAR FOURTH SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT
Material Science & Metallurgy (R2022031)	CO-1	To understand the crystalline structure of different metals and study the
	CO-2	To study the behaviour of ferrous and non-ferrous metals and alloys and their
	CO-3	To understand the effect of heat treatment, addition of alloy elements on
	CO-4	To grasp the methods of making of metal powders and applications of powder
	CO-5	To comprehend the properties and applications of ceramic, composites and
Complex Variables and Statistical Methods (R2022011)	CO-1	To apply cauchy-riemann equations to complex functions in order to
	CO-2	To find the differentiation and integration of complex functions used in
	CO-3	To make use of cauchy residue theorem to evaluate certain integrals.
	CO-4	To apply discrete and continuous probability distributions.
	CO-5	To design the components of the classical hypothesis test.
	CO-5	To infer the statistical inferential methods based on small and large sampling
Dynamics of Machinery (R2022032)	CO-1	To compute the frictional losses and transmission in clutches and brakes and
	CO-2	To determine the effect of gyroscopic couple in motor vehicles, ships and
	CO-3	To analyze the forces in 4 bar and slider crank mechanisms and design of fly
	CO-4	To determine the rotatory unbalanced mass in reciprocating equipment.
	CO-5	To determine the unbalanced forces and couples in reciprocating and radial
	CO-6	To determine the natural frequencies of discrete systems undergoing
Thermal Engineering-I (R2022033)	CO-1	To derive the actual cycle from fuel air cycle and air standard cycle for all
	CO-2	To explain working principle and various components of IC engines.
	CO-3	To explain combustion phenomenon of CI and SI engines and their impact on
	CO-4	To analyze the performance of an IC engine based on the performance
	CO-5	To explain the cycles and systems of a gas turbine and determine the
	CO-5	To explain the applications and working principle of rockets and jet
Industrial Engineering and Management (R2022034)	CO-1	To design and conduct experiments. Analyze, interpret data and synthesize
	CO-2	To design a system, component, or process and synthesize solutions to
	CO-3	To use the techniques, skills and modern tools for engineering practice with
	CO-4	To function effectively within multi-disciplinary teams and understand the
Machine Drawing Practice (R2022036)	CO-1	To draw and represent standard dimensions of different mechanical fasteners
	CO-2	To draw different types of bearings showing different components.
	CO-3	To assemble components of a machine part and draw the sectional assembly.
	CO-4	To select and represent fits and geometrical form of different mating parts in
	CO-5	To prepare manufacturing drawings indicating fits, tolerances, surface finish
Python Programming (R2022038)	CO-1	To solve different methods for linear, non-linear and differential equations.
	CO-2	To learn the python programming language.
	CO-3	To familiar with the strings and matrices in python.
	CO-4	To write the program scripts and functions in python to solve the methods.
COURSE OUTCOMES FOR THIRD YEAR FIRST SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT

Thermal Engineering-II (R2031031)	CO-1	To explain the basic concepts of thermal engineering and boilers.
	CO-2	To discuss the concepts of steam nozzles and steam turbines.
	CO-3	To gain knowledge about the concepts of reaction turbines and steam
	CO-4	To discuss the concepts of reciprocating and rotary type of compressors.
	CO-5	To acquire knowledge about the centrifugal and axial flow compressors.
Design of Machine Members-I (R2031032)	CO-1	To judge about materials and their properties along with manufacturing
	CO-2	To gain knowledge about the strength of machine elements.
	CO-3	To apply the knowledge in designing the riveted and welded joints, keys,
	CO-4	To apply the knowledge in designing the shafts and shaft couplings.
	CO-5	To apply the knowledge in designing the mechanical springs.
Machining, Machine Tools and Metrology (R2031033)	CO-1	To discuss the concepts of machining processes.
	CO-2	To apply the principles of lathe, shaping, slotting and planning machines.
	CO-3	To apply the principles of drilling, milling, and boring processes.
	CO-4	To analyze the concepts of finishing processes and the system of limits and
	CO-5	To learn the concepts of surface roughness and optical measuring instruments.
Operations Research (R203103H)	CO-1	To apply the basics of operations research and linear programming problems.
	CO-2	To apply the knowledge in solving problems of transportation, assignment
	CO-3	To judge the replacement and game theories and apply the knowledge to solve
	CO-4	To discuss the waiting line models and project management techniques.
	CO-5	To apply the knowledge in solving problems of dynamic programming and
Advanced Materials(R203103C)	CO-1	To justify the knowledge about metals and alloys and their utility in different
	CO-2	To judge about polymers and ceramics and their applications.
	CO-3	To analyze composite materials along with reinforcements and their
	CO-4	To utilize shape memory alloys and functionally graded materials for
	CO-5	To justify about the nano materials and their applications.
Machine Tools Lab (R2031034)	CO-1	To demonstrate about general purpose machine tools in the machine shop.
	CO-2	To perform various operations on lathe machines.
	CO-3	To percieve different operations on drilling machines.
	CO-4	To experiment with basic operations on shaping machine.
	CO-5	To utilize slotting machine to make key ways.
	CO-6	To experiment with basic operations on milling machine.
Thermal Engineering Lab (R2031035)	CO-1	To experiment with 2 stroke and 4 stroke compression and spark ignition
	CO-2	To percieve flash point, fire point, calorific value of different fuels using
	CO-3	To perform engine friction heat balance test, volumetric efficiency, load test
	CO-4	To perform speed test, performance test and cooling temperature on petrol
	CO-5	To utilize air compressor for its performance test and to determine efficiency.
	CO-6	To discuss the principles through assembly and disassembly of 2/3 wheelers,
Advanced Communication Skills Lab (R2031036)	CO-1	To acquire vocabulary and use it contextually.
	CO-2	To listen and speak effectively.
	CO-3	To develop proficiency in academic reading and writing.
	CO-4	To increase possibilities of job aspects, communicate confidently in formal
Professional Ethics and Human Values (R2031037)	CO-1	To judge the concepts of human values.
	CO-2	To justify the knowledge about the principles of engineering ethics.
	CO-3	To intepret engineering as social experimentation.
	CO-4	To realize engineers responsibility for safety and risk.
	CO-5	To learn about the engineers rights and responsibilities.
COURSE OUTCOMES FOR THIRD YEAR SECOND SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT
Heat Transfer (R2032031)	CO-1	To apply knowledge about mechanism and modes of heat transfer.
	CO-2	To understand the concepts of conduction and convective heat transfer.
	CO-3	To learn about forced and free convection.

(R2032031)	CO-4	To analyze the concepts of heat transfer with phase change and condensation
	CO-5	To interpret the knowledge about radiation mode of heat transfer.
Design of Machine Members-II (R2032032)	CO-1	To apply knowledge about the design of bearings.
	CO-2	To explain the concepts in designing various engine parts.
	CO-3	To utilize the knowledge to design curved beams and power screws.
	CO-4	To justify power transmission system and design pulleys and gear drives.
	CO-5	To apply the concepts in designing various machine tool elements.
Introduction to Artificial Intelligence and Machine Learning (R2032033)	CO-1	To discuss basic concepts of artificial intelligence, neural networks and
	CO-2	To apply the principles of knowledge representation and reasoning.
	CO-3	To learn about bayesian and computational learning and machine learning.
	CO-4	To utilize various machine learning techniques.
	CO-5	To apply the machine learning analytics and deep learning techniques.
Automobile Engineering (R203203A)	CO-1	To discuss various components of 4 wheler automobile.
	CO-2	To apply the knowledge of different parts of transmission system.
	CO-3	To judge about steering and suspension systems.
	CO-4	To justify the braking system and electrical system used in automobiles.
	CO-5	To analyze the concepts about engine specifications and service, safety and
Essentials of Mechanical Engineering (R203203H)	CO-1	To discuss the concepts about stresses and strains.
	CO-2	To justify about the components of transmission system.
	CO-3	To analyze problems related to project management techniques.
	CO-4	To utilize knowledge about manufacturing processes and materials.
	CO-5	To learn the concepts of boilers, steam power plants, petrol and diesel engines.
Heat Transfer Lab (R2032034)	CO-1	To determine the heat transfer rate and coefficient.
	CO-2	To determine the thermal conductivity, efficiency and effectiveness.
	CO-3	To determine the emmissivity and stephan boltzman constant.
	CO-4	To determine critical heat flux and investigate lamberts cosine law.
	CO-5	To experiment with virtual labs and analyze conduction, HT Coefficient.
	CO-6	To experiment with virtual labs and analyze lamberts laws.
CAE & CAM Lab (R2032035)	CO-1	To experiment with trusses and beams to determine stress, deflection, natural
	CO-2	To create part programmes using FANUC controller.
	CO-3	To apply G codes for automated tool path using CAM software.
	CO-4	To anlyze about rapid prototyping machine and to print simple parts.
	CO-5	To experiment with virtual 3D printing simulation using V labs.
Measurements and Metrology Lab (R2032036)	CO-1	To demonstrate the calibration experiments with different gauges,
	CO-2	To demonstrate the calibration experiments with rotameter, seismic apparatus.
	CO-3	To demonstate calibration experiments with vernier calipers, micrometer,
	CO-4	To analyze various machine tools for their allignment.
	CO-5	To measure angular and taper messurements, straightness. Surface roughness.
Artificial Intelligence and Machine Learning Lab (R2032037)	CO-1	To apply the knowledge of artificial intelligence and machine learning models along with image classifiers and autmoatic facial recognition using various software tools.
Research Methodology and IPR (R2032038)	CO-1	To apply understand objectives and characteristics of the research problem.
	CO-2	To analyze research related information and to follow research ethics.
	CO-3	To understand the types of intellectual property rights.
	CO-4	To learn about scope of IPR.
	CO-5	To understand the new developments in IPR.
COURSE OUTCOMES FOR FOURTH YEAR FIRST SEMESTER		
COURSE TITLE WITH CODE	CO	STATEMENT
Unconventional Machining Processes	CO-1	To understand the concepts of modern machining processes.
	CO-2	To learn the principles of ultra sonic machining.
	CO-3	To apply the principles and procedure of electro chemical and chemical

(R204103C)	CO-4	To apply the principles and procedure of thermal metal removal processes.
	CO-5	To illustrate the principles and procedure of electron beam machining, laser
Power Plant Engineering (R204103H)	CO-1	To identify the different components of steam power plant for power
	CO-2	To illustrate the components used in diesel and Gas power plant for power
	CO-3	To understand how the power is produced by hydro electric and nuclear
	CO-4	To interpret the power production by combined power plants and operating
	CO-5	To analyze power economics and implementation of pollution standards and
Additive Manufacturing (R204103P)	CO-1	To understand the principles of prototyping, classification of RP processes
	CO-2	To understand and apply different types of solid based RP systems.
	CO-3	To apply power based RP systems.
	CO-4	To analyze and apply various rapid tooling techniques.
	CO-5	To understand different types of data formats and explore the applications of
Disaster Management (R204101V)	CO-1	To affirm the usefulness of integrating management principles in disaster
	CO-2	To distinguish between the different approaches needed to manage pre-during
	CO-3	To explain the process of risk management.
	CO-4	To relate to risk transfer.
Safety Engineering (R204101Q)	CO-1	To understand fundamental of traffic engineering.
	CO-2	To investigate and determine the collective factors and remedies of accident
	CO-3	To design and planning various road geometrics.
	CO-4	To massage the traffic system from road safety point of view.
Mechatronics Lab (R204103Y)	CO-1	To understand the characteristics of LVDT
	CO-2	To measure load, displacement and temperature using analog and digital
	CO-3	To develop PLC programmes for control of traffic lights, water level, lifts
	CO-4	To simulate and analyze PID controllers for a physical system using
	CO-5	To develop Pneumatic and hydraulic circuits using Automation studio.