



Shree Sathyam College of Engineering and Technology

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

NH-544, Salem - Coimbatore Highways, Kuppanur, Sankari Taluk, Salem - 637301, TamilNadu, India.

Email : principal@shreesathyam.edu.in Web : www.shreesathyam.edu.in Phone : 04283 - 244080

DEPARTMENT OF MECHANICAL ENGINEERING

ANNA UNIVERSITY REGULATIONS: 2021

LIST OF COURSES

FIRST YEAR COURSES			
S.NO	NAAC CODE	SUBJECT CODE	SUBJECT NAME
01	C101	HS3152	PROFESSIONAL ENGLISH - I
02	C102	MA3151	MATRICES AND CALCULUS
03	C103	PH3151	ENGINEERING PHYSICS
04	C104	CY3151	ENGINEERING CHEMISTRY
05	C105	GE3151	PROBLEM SOLVING AND PYTHON PROGRAMMING
06	C107	GE3171	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY
07	C108	BS3171	PHYSICS AND CHEMISTRY LABORATORY - (PHYSICS LABORATORY)
08	C108	BS3171	PHYSICS AND CHEMISTRY LABORATORY - (CHEMISTRY LABORATORY)
09	C109	GE3172	ENGLISH LABORATORY
10	C110	HS3252	PROFESSIONAL ENGLISH - II
11	C111	MA3251	STATISTICS AND NUMERICAL METHODS
12	C112	PH3251	MATERIALS SCIENCE
13	C113	BE3251	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING



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14	C114	GE3251	ENGINEERING GRAPHICS
15	C115	GE3271	ENGINEERING PRACTICES LABORATORY
16	C117	BE3271	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY
17	C119	GE3272	COMMUNICATION LABORATORY / FOREIGN LANGUAGE
SECOND YEAR COURSES			
18	C201	MA3351	TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS
19	C202	ME3351	ENGINEERING MECHANICS
20	C203	ME3391	ENGINEERING THERMO DYNAMICS
21	C204	CE3391	FLUID MECHANICS AND MACHINERY
22	C205	ME3392	ENGINEERING MATERIALS AND METALLURGY
23	C206	ME3393	MANUFACTURING PROCESSES
24	C207	ME3381	COMPUTER AIDED MACHINE DRAWING
25	C208	ME3382	MANUFACTURING TECHNOLOGY LABORATORY
26	C209	GE3361	PROFESSIONAL DEVELOPMENT
27	C210	ME3491	THEORY OF MACHINES
28	C211	ME3451	THERMAL ENGINEERING
29	C212	ME3492	HYDRAULICS AND PNEUMATICS
30	C213	ME3493	MANUFACTURING TECHNOLOGY
31	C214	EE3403	MEASUREMENTS AND INSTRUMENTATION
32	C215	CE3491	STRENGTH OF MATERIALS
33	C216	GE3451	ENVIRONMENTAL SCIENCES AND SUSTAINABILITY
34	C217	CE3481	STRENGTH OF MATERIALS AND FLUID MACHINERY LABORATORY



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35	C218	ME3461	THERMAL ENGINEERING LABORATORY
THIRD YEAR COURSES			
36	C301	ME3591	DESIGN OF MACHINE ELEMENTS
36	C302	ME3592	METROLOGY AND MEASUREMENTS
37	C303	MR3691	ROBOTICS
38	C304	CME390	THERMAL POWER ENGINEERING
39	C305	CME380	AUTOMOBILE ENGINEERING
40	C306	MX3084	DISASTER RISK REDUCTION AND MANAGEMENT
41	C307	ME3581	METROLOGY AND DYNAMICS LABORATORY
42	C308	EE3511	POWER ELECTRONICS LABORATORY
48	C308	ME3691	HEAT AND MASS TRANSFER
49	C309	CME350	ENVIRONMENT SUSTAINABILITY AND IMPACT
50	C310	CME389	DESIGN OF TRANSMISSION SYSTEM
51	C311	OCS353	DATA SCIENCE FUNDAMENTALS
52	C312	MX3089	INDUSTRIAL SAFETY
53	C313	ME3681	CAD/CAM LABORATORY
54	C314	ME3682	HEAT TRANSFER LABORATORY
FINAL YEAR COURSES			
55	C401	ME3791	MECHATRONICS AND IoT
56	C402	ME3792	COMPUTER INTEGRATED MANUFACTURING
57	C403	GE3791	HUMAN VALUES AND ETHICS
58	C404	GE3792	INDUSTRIAL MANAGEMENT
59	C405	OBT355	BIOTECHNOLOGY FOR WASTE MANAGEMENT
60	C406	OML351	INTRODUCTION TO NON-DESTRUCTIVE TESTING
61	C407	ME3781	MECHATRONICS AND IoT LABORATORY
62	C408	CS3811	PROJECT WORK



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DEPARTMENT OF MECHANICAL ENGINEERING

ANNA UNIVERSITY REGULATIONS: 2021

FIRST YEAR COURSES (I& II SEMESTER)

Course Outcomes (Cos) of the Mechanical Engineering

C101	HS3152	Professional English - I
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C101.1	To use appropriate words in a professional context
C101.2	To gain understanding of basic grammatical structures and use them in right context.
C101.3	To read and infer the denotative and connotative meanings of technical texts
C101.4	To read and interpret information presented in tables, charts and other graphic forms
C101.5	To write definitions, descriptions, narrations and essays on various topics

C102	MA3151	Matrices and Calculus
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C102.1	Use the matrix algebra methods for solving practical problems.
C102.2	Apply differential calculus tools in solving various application problems.
C102.3	Able to use differential calculus ideas on several variable functions.
C102.4	Apply different methods of integration in solving practical problems
C102.5	Apply multiple integral ideas in solving areas, volumes and other practical problems.



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C103	PH3151	Engineering Physics
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C103.1	Understand the importance of mechanics.
C103.2	Express their knowledge in electromagnetic waves.
C103.3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
C103.4	Understand the importance of quantum physics.
C103.5	Comprehend and apply quantum mechanical principles towards the formation of energy bands

C104	CY3151	Engineering Chemistry
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C104.1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water
C104.2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
C104.3	To apply the knowledge of phase rule and composites for material selection requirements.
C104.4	To recommend suitable fuels for engineering processes and applications.
C104.5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.



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C105	GE3151	Problem Solving and Python Programming
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C105.1	Develop algorithmic solutions to simple computational problems
C105.2	Develop and execute simple Python programs.
C105.3	Write simple Python programs using conditionals and looping for solving problems.
C105.4	Decompose a Python program into functions
C105.5	Represent compound data using Python lists, tuples, dictionaries etc.
C105.6	Read and write data from/to files in Python programs.

C107	GE3171	Problem Solving and Python Programming Laboratory
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C107.1	Develop algorithmic solutions to simple computational problems
C107.2	Develop and execute simple Python programs.
C107.3	Implement programs in Python using conditionals and loops for solving problems.
C107.4	Deploy functions to decompose a Python program.
C107.5	Process compound data using Python data structures.
C107.6	Utilize Python packages in developing software applications.



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C108	BS3171	Physics and Chemistry Laboratory
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C108.1	Understand the functioning of various physics laboratory equipment.
C108.2	Use graphical models to analyze laboratory data.
C108.3	Use mathematical models as a medium for quantitative reasoning and describing physical reality
C108.4	Access, process and analyze scientific information.
C108.5	Solve problems individually and collaboratively.

C108.1	To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.
C108.2	To determine the amount of metal ions through volumetric and spectroscopic techniques
C108.3	To analyse and determine the composition of alloys.
C108.4	To learn simple method of synthesis of nano particles
C108.5	To quantitatively analyse the impurities in solution by electro analytical techniques



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C109	GE3172	English Laboratory
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C109.1	To listen to and comprehend general as well as complex academic information
C109.2	To listen to and understand different points of view in a discussion
C109.3	To speak fluently and accurately in formal and informal communicative contexts
C109.4	To describe products and processes and explain their uses and purposes clearly and accurately
C109.5	To express their opinions effectively in both formal and informal discussions

C110	HS3252	Professional English - II
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C110.1	To compare and contrast products and ideas in technical texts
C110.2	To identify and report cause and effects in events, industrial processes through technical texts
C110.3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
C110.4	To present their ideas and opinions in a planned and logical manner
C110.5	To draft effective resumes in the context of job search.



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C111	MA3251	Statistics and Numerical Methods
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C111.1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
C111.2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
C111.3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
C111.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
C111.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

C112	PH3251	Materials Science
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C112.1	know basics of crystallography and its importance for varied materials properties
C112.2	gain knowledge on the electrical and magnetic properties of materials and their applications
C112.3	understand clearly of semiconductor physics and functioning of semiconductor devices
C112.4	understand the optical properties of materials and working principles of various optical devices
C112.5	Appreciate the importance of functional nano electronic devices.



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C113	BE3251	Basic Electrical and Electronics Engineering
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C113.1	Compute the electric circuit parameters for simple problems
C113.2	Explain the working principle and applications of electrical machines
C113.3	Analyze the characteristics of analog electronic devices
C113.4	Explain the basic concepts of digital electronics
C113.5	Explain the operating principles of measuring instruments

C114	GE3251	Engineering Graphics
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C114.1	Use BIS conventions and specifications for engineering drawing.
C114.2	Construct the conic curves, involutes and cycloid.
C114.3	Solve practical problems involving projection of lines.
C114.4	Draw the orthographic, isometric and perspective projections of simple solids.
C114.5	Draw the development of simple solids.



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C116	GE3271	Engineering Practices Laboratory
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C116.1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.
C116.2	Wire various electrical joints in common household electrical wire work.
C116.3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.
C116.4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

C117	BE3271	Basic Electrical and Electronics Engineering Laboratory
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C117.1	Use experimental methods to verify the Ohm's and Kirchhoff's Laws.
C117.2	Analyze experimentally the load characteristics of electrical machines
C117.3	Analyze the characteristics of basic electronic devices
C117.4	Use DSO to measure the various parameters



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C118	GE3272	Communication Laboratory / Foreign Language
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C118.1	Speak effectively in group discussions held in a formal/semi formal contexts
C118.2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
C118.3	Write emails, letters and effective job applications.
C118.4	Write critical reports to convey data and information with clarity and precision
C118.5	Give appropriate instructions and recommendations for safe execution of tasks



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DEPARTMENT OF MECHANICAL ENGINEERING

ANNA UNIVERSITY REGULATIONS: 2021

SECOND YEAR COURSES (III & IV SEMESTER)

Course Outcomes (Cos)

C201	MA3351	Transforms and Partial Differential Equations
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C201.1	Understand how to solve the given standard partial differential equations.
C201.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications
C201.3	Appreciate the physical significance of Fourier series techniques in solving one- and twodimensional heat flow problems and one-dimensional wave equations.
C201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
C201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems

C202	ME3351	Engineering Mechanics
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C202.1	Illustrate the vector and scalar representation of forces and moments
C202.2	Analyse the rigid body in equilibrium
C202.3	Evaluate the properties of distributed forces
C202.4	Determine the friction and the effects by the laws of friction
C202.5	Calculate dynamic forces exerted in rigid body



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C203	ME3391	Engineering Thermodynamics
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C203.1	Apply the zeroth and first law of thermodynamics by formulating temperature scales and calculating the property changes in closed and open engineering systems.
C203.2	Apply the second law of thermodynamics in analysing the performance of thermal devices through energy and entropy calculations.
C203.3	Apply the second law of thermodynamics in evaluating the various properties of steam through steam tables and Mollier chart
C203.4	Apply the properties of pure substance in computing the macroscopic properties of ideal and real gases using gas laws and appropriate thermodynamic relations.
C203.5	Apply the properties of gas mixtures in calculating the properties of gas mixtures and applying various thermodynamic relations to calculate property changes.

C204	CE3391	Fluid Mechanics and Machinery
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C204.1	Understand the properties and behaviour in static conditions. Also, to understand the conservation laws applicable to fluids and its application through fluid kinematics and dynamics
C204.2	Estimate losses in pipelines for both laminar and turbulent conditions and analysis of pipes connected in series and parallel. Also, to understand the concept of boundary layer and its thickness on the flat solid surface.
C204.3	Formulate the relationship among the parameters involved in the given fluid phenomenon and to predict the performances of prototype by model studies
C204.4	Explain the working principles of various turbines and design the various types of turbines.
C204.5	Explain the working principles of centrifugal, reciprocating and rotary pumps and design the centrifugal and reciprocating pumps



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C205	ME3392	Engineering Materials and Metallurgy
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C205.1	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification.
C205.2	Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes.
C205.3	Clarify the effect of alloying elements on ferrous and non-ferrous metals.
C205.4	Summarize the properties and applications of non-metallic materials.
C205.5	Explain the testing of mechanical properties.

C206	ME3393	Manufacturing Processes
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C206.1	Explain the principle of different metal casting processes
C206.2	Describe the various metal joining processes
C206.3	Illustrate the different bulk deformation processes
C206.4	Apply the various sheet metal forming process.
C206.5	Apply suitable molding technique for manufacturing of plastics components.



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C207	ME3381	Computer Aided Machine Drawing
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C207.1	Prepare standard drawing layout for modelled assemblies with BoM.
C207.2	Model orthogonal views of machine components.
C207.3	Prepare standard drawing layout for modelled parts

C208	ME3382	Manufacturing Technology Laboratory
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C208.1	Demonstrate the safety precautions exercised in the mechanical workshop and join two metals using GMAW.
C208.2	The students able to make the work piece as per given shape and size using machining process such as rolling, drawing, turning, shaping, drilling and milling.
C208.3	The students become make the gears using gear making machines and analyze the defects in the cast and machined components



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C209	GE3361	Professional Development
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C209.1	Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements
C209.2	Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding
C209.3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.

C210	ME3491	Theory of Machines
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C210.1	Discuss the basics of mechanism.
C210.2	Solve problems on gears and gear trains.
C210.3	Examine friction in machine elements.
C210.4	Calculate static and dynamic forces of mechanisms.
C210.5	Calculate the balancing masses and their locations of reciprocating and rotating masses. Computing the frequency of free vibration, forced vibration and damping coefficient.



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C211	ME3451	Thermal Engineering
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C211.1	Apply thermodynamic concepts to different air standard cycles and solve problems.
C211.2	To solve problems in steam nozzle and calculate critical pressure ratio.
C211.3	Explain the flow in steam turbines, draw velocity diagrams, flow in Gas turbines and solve problems.
C211.4	Explain the functioning and features of IC engine, components and auxiliaries.
C211.5	Calculate the various performance parameters of IC engines

C212	ME3492	Hydraulics and Pneumatics
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C212.1	Apply the working principles of fluid power systems and hydraulic pumps.
C212.2	Apply the working principles of hydraulic actuators and control components
C212.3	Design and develop hydraulic circuits and systems.
C212.4	Apply the working principles of pneumatic circuits and power system and its components.
C212.5	Identify various troubles shooting methods in fluid power systems.



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C213	ME3493	Manufacturing Technology
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C213.1	Apply the mechanism of metal removal process and to identify the factors involved in improving machinability
C213.2	Describe the constructional and operational features of centre lathe and other special purpose lathes
C213.3	Describe the constructional and operational features of reciprocating machine tools
C213.4	Apply the constructional features and working principles of CNC machine tools
C213.5	Demonstrate the Program CNC machine tools through planning, writing codes and setting up CNC machine tools to manufacture a given component.

C214	CE3491	Strength of Materials
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C214.1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.
C214.2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment
C214.3	Apply basic equation of torsion in designing of shafts and helical springs
C214.4	Calculate slope and deflection in beams using different methods.
C214.5	Analyze thin and thick shells for applied pressures



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C215	GE3451	Environmental Sciences and Sustainability
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C215.1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation
C215.2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
C215.3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations
C215.4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
C215.5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization

C216	CE3481	Strength of Materials and Fluid Machinery Laboratory
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C216.1	Determine the tensile, torsion and hardness properties of metals by testing
C216.2	Determine the stiffness properties of helical and carriage spring
C216.3	Apply the conservation laws to determine the coefficient of discharge of a venturimeter and finding the friction factor of given pipe
C216.4	Apply the fluid static and momentum principles to determine the metacentric height and forces due to impact of jet
C216.5	Determine the performance characteristics of turbine, rotodynamic pump and positive displacement pump



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C217	ME3461	Thermal Engineering Laboratory
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C217.1	Conduct tests to evaluate performance characteristics of IC engines
C217.2	Conduct tests to evaluate the performance of refrigeration cycle
C217.3	Conduct tests to evaluate Performance and Energy Balance on a Steam Generator.



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DEPARTMENT OF MECHANICAL ENGINEERING

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THIRD YEAR COURSES (V & VI SEMESTER)

Course Outcomes (Cos)

C301	ME3591	Design of Machine Elements
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C301.1	Explain the design machine members subjected to static and variable loads.
C301.2	Apply the concepts design to shafts, key and couplings.
C301.3	Apply the concepts of design to bolted, Knuckle, Cotter, riveted and welded joints.
C301.4	Apply the concept of design helical, leaf springs, flywheels, connecting rods and crank shafts.
C301.5	Apply the concepts of design and select sliding and rolling contact bearings, seals and gaskets.

C302	ME3592	Metrology and Measurements
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C302.1	Discuss the concepts of measurements to apply in various metrological instruments.
C302.2	Apply the principle and applications of linear and angular measuring instruments, assembly and transmission elements.
C302.3	Apply the tolerance symbols and tolerance analysis for industrial applications.
C302.4	Apply the principles and methods of form and surface metrology.
C302.5	Apply the advances in measurements for quality control in manufacturing Industries.



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C303	MR3691	Robotics
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C303.1	State the basic concepts and terminologies of robots
C303.2	Know the Procedures for Forward and Inverse Kinematics, Dynamics for Various Robots
C303.3	Derive the Forward and Inverse Kinematics, Dynamics for Various Robots
C303.4	Apply the various programming techniques in industrial applications
C303.5	Analyze the use of various types of robots in different applications

C304	CME390	Thermal Power Engineering
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C304.1	Evaluate the fuel properties and arrive at proximate and ultimate analysis of fuels.
C304.2	Analyze different types of boilers and compute their performance parameters.
C304.3	Evaluate the performance parameters of an air compressor
C304.4	Apply the working principles of various refrigeration systems and perform cop calculations
C304.5	Analyze the psychrometric properties and how they are utilized in arriving at calculations to determine heating loads.



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C305	CME380	Automobile Engineering
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C305.1	Recognize the various parts of the automobile and their functions and materials.
C305.2	Discuss the engine auxiliary systems and engine emission control
C305.3	Distinguish the working of different types of transmission systems
C305.4	Explain the Steering, Brakes and Suspension Systems.
C305.5	Predict possible alternate sources of energy for IC Engines.

C306	MX3084	Disaster Risk Reduction and Management
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C306.1	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)
C306.2	To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
C306.3	To develop disaster response skills by adopting relevant tools and technology
C306.4	Enhance awareness of institutional processes for Disaster response in the country
C306.5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity



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C307	ME3581	Metrology and Dynamics Laboratory
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C307.1	The students able to measure the gear tooth dimensions, angle using sine bar, straightness.
C307.2	Determine mass moment of inertia of mechanical element, governor effort and range of sensitivity
C307.3	Determine the natural frequency and damping coefficient, critical speeds of shafts,

C308	ME3691	Heat and Mass Transfer
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C308.1	Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems.
C308.2	Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems.
C308.3	Explain the phenomena of boiling and condensation, apply LMTD and NTU methods of thermal analysis to different types of heat exchanger configurations and solve problems
C308.4	Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types of surfaces to solve problems.
C308.5	Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications.



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C309	CME350	Environmental Sustainability and Impact Assessment
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C309.1	Explain the concepts of Environment Sustainability and trained to make decision related to Environment
C309.2	Make decision that has an effect on our environment
C309.3	Evaluate the basics of environmental policy, planning and various legislation Get valuable information for exploring decisions in each life stage of materials, buildings, services and infrastructure
C309.4	Explain the Life cycle assessment of Environmental sustainability
C309.5	Explain sustainable urban economic development

C310	CME389	Design of Transmission System
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C310.1	Apply the concepts of design to belts, chains and rope drives
C310.2	Apply the concepts of design to spur, helical gears
C310.3	Apply the concepts of design to worm and bevel gears
C310.4	Apply the concepts of design to gear boxes
C310.5	Apply the concepts of design to cams, brakes and clutches



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C311	OCS353	Data Science Fundamentals
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C311.1	Gain knowledge on data science process
C311.2	Perform data manipulation functions using Numpy and Pandas
C311.3	Understand different types of machine learning approaches
C311.4	Perform data visualization using tools.
C311.5	Handle large volumes of data in practical scenarios

C312	MX3089	Industrial Safety
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C312.1	Understand the basic concept of safety.
C312.2	Obtain knowledge of Statutory Regulations and standards
C312.3	Know about the safety Activities of the Working Place
C312.4	Analyze on the impact of Occupational Exposures and their Remedies
C312.5	Obtain knowledge of Risk Assessment Techniques



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C313	ME3681	CAD/CAM Laboratory
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C313.1	Design experience in handling 2D drafting and 3D modelling software systems
C313.2	Design 3 Dimensional geometric model of parts, sub-assemblies, assemblies and export it to drawing
C313.3	Demonstrate manual part programming and simulate the CNC program and Generate part programming using G and M code through CAM software.

C314	ME3682	Heat Transfer Laboratory
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C314.1	Conduct experiment on Predict the thermal conductivity of solids and liquids
C314.2	Conduct experiment on Estimate the heat transfer coefficient values of various fluids.
C314.3	Conduct experiment on Test the performance of tubes in tube heat exchangers



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DEPARTMENT OF MECHANICAL ENGINEERING

ANNA UNIVERSITY REGULATIONS: 2021

FINAL YEAR COURSES (VII & VIII SEMESTER)

Course Outcomes (Cos)

C401	ME3791	Mechatronics and IoT
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C401.1	Explain Select suitable sensors and actuators to develop mechatronics systems.
C401.2	Discuss Devise proper signal conditioning circuit for mechatronics systems, and also able to implement PLC as a controller for an automated system
C401.3	Elucidate the fundamentals of Iot and Embedded Systems
C401.4	Discuss Control I/O devices through Arduino and Raspberry Pi.
C401.5	Design and develop an apt mechatronics /IoT based system for the given real-time application

C402	ME3792	Computer Integrated Manufacturing
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C402.1	Discuss the basics of computer aided engineering.
C402.2	Choose appropriate automotive tools and material handling systems
C402.3	Discuss the overview of group technology, FMS and automation identification methods
C402.4	Design using computer aided process planning for manufacturing of various components
C402.5	Acquire knowledge in computer process control techniques



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C403	GE3791	Human Values and Ethics
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C403.1	Identify the importance of democratic, secular and scientific values in harmonious functioning of social life
C403.2	Practice democratic and scientific values in both their personal and professional life
C403.3	Find rational solutions to social problems.
C403.4	Behave in an ethical manner in society
C403.5	Practice critical thinking and the pursuit of truth.

C404	GE3792	Industrial Management
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C404.1	Discuss basic concepts of management; approaches to management; contributors to management studies; various forms of business organization and trade unions function in professional organizations
C404.2	Discuss the planning; organizing and staffing functions of management in professional organization.
C404.3	Apply the leading; controlling and decision making functions of management in professional organization.
C404.4	Discuss the organizational theory in professional organization.
C404.5	Apply principles of productivity and modern concepts in management in professional organization.



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C405	OBT355	BIOTECHNOLOGY FOR WASTE MANAGEMENT
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C405.1	To learn the various methods biological treatment
C405.2	To know the details of waste biomass and its value addition
C405.3	To develop the bioconversion processes to convert wastes to energy
C405.4	To synthesize the chemicals and enzyme from wastes
C405.5	To produce the bio compost from wastes
C405.6	To apply the theoretical knowledge for the development of value added products

C406	OML351	INTRODUCTION TO NON-DESTRUCTIVE TESTING
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C406.1	Realize the importance of NDT in various engineering fields.
C406.2	Have a basic knowledge of surface NDE techniques which enables to carry out various inspection in accordance with the established procedures.
C406.3	Calibrate the instrument and inspect for in-service damage in the components by means of Eddy current testing as well as Thermography testing.
C406.4	Differentiate various techniques of UT and AET and select appropriate NDT methods for better evaluation.
C406.5	Interpret the results of Radiography testing and also have the ability to analyse the influence of various parameters on the testing.



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C407	ME3781	MECHATRONICS AND IoT LABORATORY
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C407.1	Demonstrate the functioning of mechatronics systems with various pneumatic, hydraulic and electrical systems.
C407.2	Demonstrate the microcontroller and PLC as controllers in automation systems by executing proper interfacing of I/O devices and programming
C407.3	Demonstrate the sensing and actuation of mechatronics elements using IoT.

C408	CS3811	Project Work
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C408.1	Gain Domain knowledge and technical skill set required for solving industry/ research problems
C408.2	Provide solution architecture, module level designs, algorithms
C408.3	Implement, test and deploy the solution for the target platform
C408.4	Prepare detailed technical report, demonstrate and present the work



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