

Jagadamba College of Engineering & Technology Yavatmal
Department of Mechanical Engineering (UG)

Year: Second Year	Semester: Third
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Course Name: Mathematics III	Course Code: CO23ME01
CO23ME01.1	To understand ordinary differential equation
CO23ME01.2	To learn about Laplace transformation and its applications.
CO23ME01.3	To understand PDEs of n^{th} order with constant coefficients
CO23ME01.4	To learn about Numerical Methods.
CO23ME01.5	To understand the concept of Complex variables
CO23ME01.6	To understand the concept of Statistics

Course Name: Mechanics of Material	Course Code: CO23ME02
CO23ME02.1	To emphasize on the mechanical properties of materials. Mainly stress-strain diagram, uniaxial and biaxial tensions and compressions
CO23ME02.2	To understand about the beams and their loading effects like axial force and shear force, shear force and axial load diagram.
CO23ME02.3	To learn about stresses in beams mainly in shear and bending, strain energy and its effects.
CO23ME02.4	To explain in details about the phenomenon of torsion in thick and thin cylinders, solid and similar such geometries.
CO23ME02.5	To study the effects of combined, bending and principal stresses

Course Name: FLUID POWER-I	Course Code: CO23ME03
CO23ME03.1	To makes the students aware about the concepts of fluid mechanics including the concept of mass and momentum conversion
CO23ME03.2	To make the students able to understand and apply the Bernoulli's equation to solve the problems in fluid mechanics
CO23ME03.3	To apply the Control-Volume analysis to the problems in fluid mechanics
CO23ME03.4	To apply the Darcy-Weisbach equation to solve the problems in pipe flow
CO23ME03.5	To develops the ability to perform dimensional analysis for complexities in Fluid Mech.
CO23ME03.6	To grasps the concept of Laminar, Turbulent and Boundary Layer fundamentals

Course Name: ENGG THERMODYNAMICS	Course Code: CO23ME04
CO23ME04.1	To understand the fundamental concepts of Thermodynamics
CO23ME04.2	To solve theoretical problem of heat and work.
CO23ME04.3	To understand First Law of Thermodynamics and its application in engineering devices
CO23ME04.4	To understand Second Law of Thermodynamics and its application in engineering devices
CO23ME04.5	To understands importance of Entropy and its effect on different processes.
CO23ME04.6	To study different power cycles and learns to derive work and efficiency.

Course Name: MANUFACTURING PROCESSES-I	Course Code: CO23ME05
CO23ME05.1	To understands the basic casting process and its elements like patten, sand etc.
CO23ME05.2	To understands functioning of furnaces and its types. Also they will be able to inspect defects in castings.
CO23ME05.3	To understands different types of casting processes.
CO23ME05.4	To understands cold and hot working processes and its applications in production Engg.
CO23ME05.5	To Use the knowledge of different material joining processes in production process.
CO23ME05.6	To Understand conventional and non-conventional joining processes

Year: Second Year	Semester: Fourth
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Course Name: BASIC ELECTRICAL DRIVES & CONTROL	Course Code: CO24ME01
CO24ME01.1	To understand concept of general electric drive and its applications.
CO24ME01.2	To understand the special types of motors and the basic characteristics of DC motor
CO24ME01.3	To understand working principle 3 Phase A.C. motor drives and its applications.
CO24ME01.4	To understand the conventional methods of speed control for A.C. and D.C. drives.
CO24ME01.5	To understand the basic construction , principle of working and applications of sensors, transducers, switches etc.
CO23ME05.6	To learn application of drives in industrial sectors.

Course Name: Engineering Metallurgy	Course Code: CO24ME02
CO24ME02.1	To study classification of different materials on the basis of structures and its applications.
CO24ME02.2	To study Iron-Carbon (Fe-C) equilibrium diagrams its significances.
CO24ME02.3	To gain knowledge about composite materials its application in day to days life and advantages over conventional material.
CO24ME02.4	To study various non ferrous metals and its alloys.
CO24ME02.5	To study the various heat treatment processes for improving the metal properties, with special study of Annealing, Normalizing, Tempering etc.
CO23ME02.6	To Study various types metal hardening and softening process with special study of Carburizing, Nitriding, Cyaniding, hot and cold working etc.
CO23ME02.7	To learn about the concept of Powder metallurgy and preparation metal powders.

Course Name: Energy Conversion-I	Course Code: CO24ME03
CO24ME03.1	To gain the knowledge about the properties of steam and its utilization as a working fluid in industrial applications.
CO24ME03.2	To acquire basic knowledge of various types of boilers, its mountings and accessories and basic study about performance governing parameters the of boilers
CO24ME03.3	To study and understand fuel and ash handling systems used in power plants.
CO24ME03.4	To know about the basic layout of steam power plant and various parameters for site selection.
CO24ME03.5	To study about the steam turbines and its different governing methods.

Course Name: Manufacturing Process-II	Course Code: CO24ME04
CO24ME04.1	To Study details about tool geometry and its related parameters such as tool life, tool wear, cutting forces etc.
CO24ME04.2	To Study the details of construction, working and operation of Centre Lathe, Capstone and Turret Lathe machine and its operations.
CO24ME04.3	To Study the details of construction, working and operation of Drilling, Boring and Broaching machine and its operation.
CO24ME04.4	To Study the details of construction, working and operation of Milling machine and its operations.
CO24ME04.5	To Study Unconventional machining processes including Mechanical, Thermal and electrochemical machining.
CO23ME04.6	Study finishing and super finishing operations and processes.

Course Name: Machine Design & Drawing-I	Course Code: CO24ME05
CO24ME05.1	To gain the basic knowledge about the sectional/orthographic projections.
CO24ME05.2	To understand the principles of Development of surfaces and Intersection of solids.
CO24ME05.3	To Study the types of stresses and C-clamps and design and drawing of Riveted joints, Welded joints and Knuckle Joint.
CO24ME05.4	To Design of Helical, Spiral and Leaf Springs and Power Screw.

Year: Third Year	Semester: Fifth
Course Name: Production Technology	Course Code: CO35ME01
CO35ME01.1	To understand the concept of TQM.
CO35ME01.2	To understand the quality charts such as ND-curve, control charts.
CO35ME01.3	To understand the principles of work study
CO35ME01.4	To understand the standards of measurements
CO35ME01.5	To understand linear measurement devices like comparators and angular measurements, screw thread measurements
CO35ME01.6	To Understand Gear measurement devices and errors in gear measurements like run out and backlash.

Course Name: Heat Transfer	Course Code: CO35ME02
CO35ME02.1	To understand the concept of heat transfer and its modes in 2D and 3D surfaces.
CO35ME02.2	To developed governing equations of conduction for various geometries.

CO35ME02.3	To gain the basic knowledge about the insulation, thermal effectiveness related with the heat transfer process.
CO35ME02.4	To understand the phenomenon of convection and be able to solve problems of convection
CO35ME02.5	To understand the effect of radiation and its significance in daily life.
CO35ME02.6	To Design and develop heat exchangers using methodologies like LMTD, NTU.

Course Name: Measurement System	Course Code: CO35ME03
CO35ME03.1	To Study general measurement systems and its applications in industrial sectors.
CO35ME03.2	To gain the knowledge about different types of characteristics and errors occurred in measuring instruments.
CO35ME03.3	To Study measurement of the stress, strain and pressure with special reference to industrial applications.
CO35ME03.4	To Study the methodologies, construction and detail working of Force, Power, Flow and Torque measurement devices.
CO35ME03.5	Study the methodologies, construction and detail working of Temperature and Liquid level measurements devices.
CO35ME03.6	Study the methodologies, construction and detail working of Speed, Vibration, Displacement measurements devices.

Course Name: Theory of Machine -I	Course Code: CO35ME04
CO35ME04.1	To learn about the different types of mechanisms, and its inversions.
CO35ME04.2	To gain the knowledge about analysis of Kinematic mechanisms.
CO35ME04.3	To learn about the velocity and acceleration analysis of simple and compound mechanisms with different methods such as instantaneous centre method etc.
CO35ME04.4	To Study the types of synthesis of mechanisms with graphical methods and overlay method.
CO35ME04.5	To study the working, construction and details of instruments utilizing friction such as bearings, clutches, brakes.
CO35ME04.6	To Study the profile and utilization of cams, followers by Graphical methods.
CO35ME04.7	To define the terminologies used in gears along with their profile

Course Name: Basics of Building Construction	Course Code: CO35ME06
CO35ME06.1	To understand the introduction & importance of building, type of structures, their advantages & disadvantages also the foundation types and their importance.
CO35ME06.2	To understand the type of masonry and their technical terms. Bonds used during the construction & their use also the advantages & disadvantages.
CO35ME06.3	To understand the type of floors, floor finishes, types of flooring material, their suitability, Types and suitability of roofs, fixing & fastening.
CO35ME06.4	To understand the type of doors, purposes. Method to fixing windows as well as doors, ventilators, fixture and fastening for windows, doors, ventilators. Types and suitability of lintel & arches, glass
CO35ME06.5	To understand the function, technical terms of stairs. Types of staircases and their suitability, Plastering and Pointing, Painting and Coloring and their uses Scaffolding- Purposes, types, suitability.
CO35ME06.6	To understand the Special Aspects of Construction, Damp proofing, Fire proof construction, Sound proof construction, Joints, Provision of construction joints in slabs, beams and columns.

Year: Third Year	Semester: Sixth
Course Name: Fluid Power-II	Course Code: CO36ME01
CO36ME01.1	To Get the basic knowledge of hydraulic prime movers like impulse and reaction turbine and gain the knowledge about their characteristics and governing equations.
CO36ME01.2	To able for selection of appropriate pumps as per given applications and get the knowledge of characteristics of a pumps.
CO36ME01.3	To understand the working and difference between axial flow pumps and the basic knowledge of CFD.
CO36ME01.4	To deal with the working and analysis of positive displacement pumps.
CO36ME01.5	To know about compressible fluid flow.
CO36ME01.6	To get acquainted with hydrostatic and hydrokinetic system

Course Name: Computer Software Applications-II	Course Code: CO36ME02
CO36ME02.1	To Understand the concept of DBMS
CO36ME02.2	To understand the structure of relational databases along with algebra operations
CO36ME02.3	To understand the concept of Database design and entity relational model.
CO36ME02.4	To understand the SQL
CO36ME02.5	Understand relational database design along with atomic domains and modelling temporal data
CO36ME02.6	To understand the concept of modeling and simulation

Course Name: Control System Engineering	Course Code: CO36ME03
CO36ME03.1	To understand the transfer function of feedback system
CO36ME03.2	To Conceptualize industrial controllers, their types, construction and working
CO36ME03.3	To Learn time domain analysis
CO36ME03.4	To conceptualize stability using Root locus and Bode plots
CO36ME03.5	To understand the concept of Gain margin and Phase margin
CO36ME03.6	To Study the importance of automatic speed control systems like prime movers, generators etc

Course Name: Theory of Machine –II	Course Code: CO36ME04
CO36ME04.1	To study static force analysis to plane motion mechanisms
CO36ME04.2	About hydrodynamic lubrication, thin and thick film lubrication system
CO36ME04.3	To find the output of machineries using Crank Effort and Turning moment diagram
CO36ME04.4	Study the effect of inertia forces in various parts of reciprocating engine by graphical method
CO36ME04.5	To study Conceptual Vehicle Dynamics
CO36ME04.6	To Study and realize the importance of mechanical vibrations and also find their frequency.
CO36ME04.7	To study multi rotor vibration systems and learn about static and balancing of masses.

Course Name: Communication Skills	Course Code: CO36ME06
CO36ME06.1	To understand the comprehension over an unseen passage with the study of different functions of words as well as structure of grammatical sentences.
CO36ME06.2	To understand the basics of communication and its principles.
CO36ME06.3	To understand specific formats for written communication for official uses and other uses of Non-verbal communication.

Year: Fourth Year	Semester: Seventh
Course Name: Machine Design & Drawing-II	Course Code: CO47ME01
CO47ME01.1	To be aware about types of power transmission devices and their design such as for shafts, keys and couplings in details.
CO47ME01.2	To calculate amount of heat generated in various types of bearings, energy stored in flywheels and applications of wire rope in industries
CO47ME01.3	To be able to calculate various stresses in IC Engine parts
CO47ME01.4	To introduce concept of Governor and find the mass and centrifugal forces of fly balls
CO47ME01.5	To be able to find the bending, tensile stresses in gears
CO47ME01.6	To determine the torsional rigidity, strength, stiffness, specific weight of the shaft

Course Name: Energy Conversion –II	Course Code: CO47ME02
CO47ME02.1	To study P-V & T-S diagram of compressor and able to solve design based problem of reciprocating Compressor
CO47ME02.2	To understand to study P-V & T-S diagram of compressor and able to solve design based problem of Rotary Comp.
CO47ME02.3	To understand basics of Refrigeration & Air -conditioning cycles and based numerical.
CO47ME02.4	To Understand Construction & operation of Gas turbine will able to solve numerical on gas turbine
CO47ME02.5	Understand basic working of Nuclear Power plant theoretically.
CO47ME02.6	To gain the knowledge about Non conventional energy system and its application in societies.

Course Name: Industrial Management and Costing	Course Code: CO47ME03
CO47ME03.1	To understand the Functions of management, organization structure & relationship
CO47ME03.2	To understand the Marketing & sales Management

CO47ME03.3	To be will able to identify responsibility and task of different organizational function such as Marketing, Product development etc.
CO47ME03.4	To explain the main managerial concepts & tools used within in different organizational functions
CO47ME03.5	To interpret financial statements and analyze how managerial decision impacts financial outcomes
CO47ME03.6	To understand human behavior in multi-culture environments.

Course Name: Automation Engineering	Course Code: CO47ME04
CO47ME04.1	To gain the basic knowledge of functioning of automation its types.
CO47ME04.2	To develop codes for NC/CNC working of machines.
CO47ME04.3	To understand the importance of robots in manufacturing and its applications.
CO47ME04.4	To understand importance of Group technology
CO47ME04.5	About flexible manufacturing techniques
CO47ME04.6	To grasp the importance and know about the methods of using computer for manufacturing purposes

Course Name: (Elective – I) TOOL ENGG	Course Code: CO47ME05
CO47ME05.1	To develop knowledge about cutting tools, their geometries, nomenclature and energy relations.
CO47ME05.2	Importance of Jigs and fixtures in manufacturing area and different types of jig & fixtures according to type of operations.
CO47ME05.3	Design of various types of Jigs & Fixtures.
CO47ME05.4	About various multipoint cutting tools and their industrial applications
CO47ME05.5	Awareness about various types of presses, press operations, press tool dies and stock layout
CO47ME05.6	To Design of press working tools and dies

Year: Fourth Year	Semester: Eighth
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Course Name: (Elective –II) AUTOMOBILE ENGG	Course Code: CO48ME01
CO48ME01.1	To classify automobiles on the basis of chassis, power unit etc
CO48ME01.2	About fuel feeding systems
CO48ME01.3	About the electrical connections in an automobile including ignition system
CO48ME01.4	About various possibilities for transmitting power from the engine
CO48ME01.5	About the braking systems in automobiles
CO48ME01.6	About the steering systems in automobile
CO48ME01.7	About the lubrication systems in automobiles
CO48ME01.8	About the suspension systems in automobiles

Course Name: (Elective –III) RAC	Course Code: CO48ME02
CO48ME02.1	To know about the basic refrigeration cycles with special impetus on Vapour Compression Refrigeration Cycles
CO48ME02.2	To Use and solve problems with the help of p-h, T-s, p-v charts for specific refrigerants
CO48ME02.3	To apply the basic principles of psychometric and applied psychometric
CO48ME02.4	To get familiarized with different refrigerants and be able to classify them as per the applications
CO48ME02.5	Perform load calculations and design ducts at elementary level for air conditioning purposes
CO48ME02.6	To understand and know about the various components of VCR, VAR systems.

Course Name: I.C. Engines	Course Code: CO48ME03
CO48ME03.1	To study the Detailed information regarding different Thermodynamic cycles like Air Standard Cycles, Fuel Air Cycle and Actual Cycle
CO48ME03.2	To study the properties and limitation of Conventional fossil Fuels its adverse effect on environment. To Identify the importance alternative fuel, its properties
CO48ME03.3	To study combustion phenomenon of Spark Ignition Engine and factors responsible for abnormal combustion like detonation & its effects on the performance of engine
CO48ME03.4	To study the combustion phenomenon in Diesel engine. Factors affect performance of engine and diesel knock.
CO48ME03.5	To evaluate the performance parameters of I.C.Engine through various methods like Heat Balance Sheet, Morse Test.
CO48ME03.6	Awareness about the emission of harmful gases by I.C.Engine. The adverse effects of emitted pollutants on human health and environment

Course Name: Operations Research Techniques	Course Code: CO48ME04
CO48ME04.1	To apply mathematical models that are needed to solve optimization problems.
CO48ME04.2	To Solve practical problem of LPP.
CO48ME04.3	To Understand CPM & PERT. Also apply to apply it in engineering for complex problem analysis
CO48ME04.4	To understand waiting line models and apply it
CO48ME04.5	To apply simulation for problem solving in engineering
CO48ME04.6	To apply Dynamic programming for solving budgeting issues