

Mahavir Polytechnic

Mhasrul Varvandi Road, Nashik, Maharashtra

Department of Mechanical Engineering

Course Outcomes MSBTE prescribed syllabus, as per the Scheme 'G'

Semester - I

Abbreviation Subject Code ENG - English (17101)

- 1) Understand English the language as a medium of expressing oneself and being global language, use it in all spheres of life Personal, Professional and Social.
- 2) Developing the vocabulary.
- 3) Learn and apply rules of grammar.
- 4) Comprehend the given unseen paragraph.

EPH - Basic Physics

(17102)

- 1) Understand the method of selection of material for intended purpose.
- 2) Application of knowledge of heat conductors (good and bad conductors of heat) in various engineering concepts.
- 3) Understand the effect of interference between the waves of light.
- 4) Application of knowledge of wave motion and resonance in various engineering applications.
- 5) Application of concept photoelectric effect for application like Photoelectric cell and Solar cell.

ECH - Basic Chemistry

(17103)

- 1) Understand the concept of valence electron and valency of elements.
- 2) Application of knowledge of electrolysis in engineering applications.
- 3) Understand the formation process/reactions of various molecules.
- 4) Application of the properties of metals and alloys in engineering field.
- 5) Understand the use of non-metallic material in engineering field.

BMS - Basic Mathematics (17104)

- 1) Apply the Crammer's rule and Matrix method to solve simultaneous equations in three variables.
- 2) Use concept of allied angle, compound angle, multiple and sub-multiple angles to solve engineering problems.
- 3) Use factorization and de-factorization formulae to solve examples.
- 4) Understand the relationship of two variables.

5)
EGG - Engineering Graphics (17001)

- 1) Draw different engineering curves and know their applications.
- 2) Draw orthographic projections of different objects.
- 3) Visualize three dimensional objects and draw Isometric Projections.
- 4) Draw simple geometrical figures using CAD package.

CMF - Computer Fundamentals (17002)

- 1) Use of Operating System.
- 2) Use MS-Word, MS-Excel, MS-Power Point, effectively for documentation.
- 3) Use browser for accessing the Internet
- 4) Handle Personal Computer System

WPI - Basic Workshop Practice (17007)

- 1) Know basic workshop processes.
- 2) Read and interpret job drawing, plan various operations and make assembly.
- 3) Identify and select the proper material for the job undertaken.
- 4) Identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.
- 5) Operate, control different machines and equipment in respective shops.
- 6) Inspect the job for specified dimensions

Semester - II

Abbreviation Subject Code
CMS - Communication Skills (17201)

- 1) Utilize the skills necessary to be a competent communicator.
- 2) Select and apply the appropriate methods of communication in various situations.

APH - Applied Physics

- 1) Understand laws and principles of electrical circuits.
- 2) Classify solids on the basis of semiconductor band theory.
- 3) Understand principles of Laser and its applications in engineering fields.
- 4) Identify superconductor and its types.
- 5) Understands applications of nanoparticles in engineering field.

ACH – Applied Chemistry

(17203)

(17202)

- 1) Select proper type of cell based on the requirement in electronics and computer engineering.
- 2) Apply knowledge of extraction, properties of copper and aluminium in engineering applications.
- 3) Know various insulating or dielectric materials used in for electronic equipments and computers.
- 4) Generalize different factors which affect atmospheric as well as electrochemical corrosion.

EGM Engineering Mechanics

(17204)

- 1) Understand the effect of different types of coplanar forces.
- 2) Apply Principles of equilibrium in finding reactions of different types of beams.
- 3) Apply principles of equilibrium for locating centroid and centre of gravity for given solids.
- 4) Understand working of different types of machines

EDG Engineering Drawing

(17205)

- 1) Understand the basic concepts of projection of different entities.
- 2) Visualize and draw views of objects in different positions.
- 3) Develop lateral surfaces of different solids.
- 4) Prepare proportionate free hand sketches of basic machine elements.

EMS - Engineering Mathematics

(17216)

- 1) Use complex numbers for representing different circuit component in complex form to determine performance of electrical circuit and machines.
- 2) Apply rules and methods of differential calculus to solve problems.
- 3) Apply various numerical methods to solve algebraic and simultaneous equations.

DLS - Development of Life Skills

(17010)

- 1) Understand and appreciate importance of life skills.
- 2) Use self-analysis and apply techniques to develop personality.
- 3) Use different search techniques for gathering information and working effectively.
- 4) Improve the presentation skills.

WPC- Workshop Practice

(17011)

- 1)Know basic workshop processes.
- 2) Read and interpret job drawing, plan various operations and make assembly.
- 3) Identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.
- 4) Operate, control different machines and equipment in respective shops.
- 5) Produce and Inspect the job for specified dimensions
- 6) Adopt safety practices while working on various machines.
- 7) Know basic workshop processes.
- 8) Produce jobs as per specified dimensions.

AMS

Applied Mathematics

(17301)

- 1) Apply derivatives to find slope, maxima, minima and radius of curvature.
- 2) Apply integral calculus to solve different engineering problems.
- 3) Apply the concept of integration for finding area.
- 4) Apply differential equation for solving problems in different engineering fields.
- 5) Apply the knowledge of probability to solve the examples related to the production process.

BEM

Basic Electronics & Mechatronics

(17302)

- 1) Identify and test different electronic components.
- 2) Use principles of circuit operations and its applications.
- 3) Distinguish various elements in analogue and digital electronics.
- 4) Understand applications of electronics in mechanical field for measurement and control.
- 5) Understand working of different types of transducers and their applications.
- 6) Understand concept of mechatronics and PLC.

MEM

Mechanical Engineering Materials

(17303)

- 1) Understands about basics of engineering materials as regards classification, structure and properties.
- 2) Understand basics of structure property relationships of heat treatments.
- 4) Analyze various types of steels and cast irons along with their specifications.
- 5) Understand about types , composition and field of application of various non ferrous metals
- and alloys &non metallic materials
- 6) Understand about types, composition and field of application of various Non metallic materials.
- 7) Understand about basic process of powder metallurgy and applications.
- 8) Understand about various Non-destructive testing methods and their applications.

SOM

Strength of Materials

(17304)

- 1)Understand the fundamentals of solid mechanics.
- 2) Acquire elementary knowledge of stresses, strains & material properties.
- 3) Understand & analyze the basic principles involved in the behavior of machine parts under load in the context of designing it.
- 4) Understand & analyze the mechanical properties of the various materials.

MED

Mechanical Engineering Drawing

(17305)

- 1) Interpret simple industrial drawings.
- 2) Interpret instructions related to manufacturing of components.
- 3) Use IS convention of representing various machine components.
- 4) Appreciate the significance & use of tolerances of size, forms & positions

(17016)

- 1) Draw, edit and modify 2D drawings.
- 2) Give dimensions, tolerances and geometrical tolerances.
- 3) Draw Isometric drawing and 3 D drawing.
- 4) Plot a drawing.

PPO - Professional Practices - I

(17017)

(17402)

- 1) Acquire information from different sources the books, the internet and the magazines etc.
- 2) Prepare notes for given topic.
- 3) Present given topic in a Seminar.
- 4) Interact with peers to share thoughts and information.
- 5) Prepare a report on Industrial Visits and Expert's Lecture.

Semester - IV

Abbreviation Subject Code EST - Environmental Studies (17401)

- 1) Understand the importance of environment.
- 2) Know key issues about environment.
- 3) Understand the reasons for environment degradation.
- 4) Know aspects about improvement methods.
- 5) Know initiatives taken by the world bodies to restrict and reduce degradation.

PR Manufacturing Processes

- 1) Use the basic machine tools like lathe and drilling.
- 2) Produce and inspect the job as per specified dimensions.
- 3) Select the specific manufacturing processes for the desired output.
- 4) Adopt safety practices while working on various machines.
- 5) Explain the different types of plastic molding processes.
- 6) Select the basic manufacturing process for different components to be machined.

EEN Electrical Engineering (17404)

- 1) Differentiate between a.c. and d.c. supply.
- 2) Identify different type's motors, transformers and drives.
- 3) Select suitable drive as per the requirements.
- 4) Understand various types of electric heating and welding operations in manufacturing processes.
- 5) Supervise routine maintenance of electrical machines and supply systems.
- 6) Use the tariff system.
- 7) Calculate energy requirements and cost of energy.

- 1) Define fundamental concepts of thermodynamics to thermodynamic systems.
- 2) Use various laws of thermodynamics.
- 3) Apply various gas laws and ideal gas processes to various thermodynamic systems.
- 4) Draw the construction and explain working of boilers, turbines & condensers.
- 5) Find properties of two phase system from steam table / mollier charts
- 6) State the various modes of heat transfer

FMM

Fluid Mechanics & Machinery

(17411)

- 1) Define various properties of fluids
- 2) Measure pressure, velocity and flow rate using various instruments.
- 3) State continuity equation, Bernoulli's equation and its applications.
- 4) Estimate various losses in flow through pipes.
- 5) Explain concept of impact of jet on various types of vanes.
- 6) Draw the construction, working of hydraulic pumps and turbines.
- 7) Evaluate performance of turbines and pumps.

TOM

Theory of Machines

(17412)

- 1] Understand different machine elements and mechanisms.
- 2] Understand Kinematics and Dynamics of different machines and mechanisms.
- 3] Draw cam profile suitable to various displacement diagrams.
- 4] Select Suitable Drives and Mechanisms for a particular application
- 5] Understand the function, operation and application of flywheel and governor.
- 6] Understand the function, operation and application of brake, dynamometer, clutch and bearing
- 7] Find magnitude and plane of unbalanced forces.

PPT -

Professional Practices - II

(17035)

- 1) Acquire the knowledge from different resources.
- 2) Present a given topic effectively in a seminar and build a stage-daring.
- 3) Interact with colleague through group discussion.

Semester - V

AEN

Automobile Engineering

(17526)

- 1) Know about Automobile market in India.
- 2) Know the vehicles performance parameters.
- 3) Understand the detailed construction features of automobile engines.
- 4) Dismantle and assemble the automobile engines and vehicle systems.
- 5) Know various advanced features in modern automobile vehicles.
- 6) Understand and identify various system components with their functions.
- 7) Compare and select the automobile vehicles based on their features.

(17527)

- 1) Know different Non-traditional machining processes.
- 2) Understand the working of Broaching Machine, Milling Machine, Gear Cutting machines, Grinding Machines, Surface finishing machines.
- 3) Work as a maintenance engineer.
- 4) Know the Operation and control of different CNC machine tools.
- 5) Produce jobs as per specified requirements by selecting the specific machining process.
- 6) Adopt safety practices while working on various machines.
- 7) Develop the mindset for modern trends in manufacturing and automation.

MAC Measurement & Control \ (17528)

- 1] Understand the principle of operation of an instrument.
- 2] Appreciate the concept of calibration of an instrument.
- 3] Select Suitable measuring device for a particular application.
- 4] Identify different types of errors.

PEN Power Engineering

(17529)

- 1) Describe construction and working of I. C. Engines.
- 2) Calculate various performance parameters by conducting trial on I. C. Engines.
- 3) Explain working and applications of gas turbines.
- 4) Explain different types of air compressors and conduct trial on air Compressor.
- 5) Describe construction, working and application of vapor compression cycle.
- 6) Appreciate psychometric processes and air conditioning systems.

MQC Metrology and Quality Control

(17530)

- 1) Understand and calculate the least count of all basic measuring instruments.
- 2) Select and use appropriate instrument/s for specific measurement.
- 3) Understand the systems of limits, fits and tolerances and correlate with machine drawing and manufacturing processes.
- 4) Analyze and interpret the data obtained from the different measurements processes and present it in the graphical form, statistical form for understanding the concepts of SQC.
- 5) Construct, draw and interpret the control charts

CNC CNC Machines (17064)

- 1) Know different types of CNC machines,
- 2) Understand the different codes used in CNC programming.
- 3) Know the Operation and control of different CNC machine and equipments.
- 4) Adopt different tooling while working on various CNC machines.

PPT - Professional Practices - III (17065)

- 1) Acquire Information & Knowledge from different resources
- 2) Write the reports Industry Visits & Guest Lectures.
- 3) Deliver Seminars on a given topic which will help them to build self-confidence &Knowledge.
- 4) Interact with each other through group discussion.
- 5) Present the feedback of various activities.

BSC Behavioural Science (17075)

- 1) Develop him/her as Team leader.
- 2) Use self-motivation and motivate others.
- 3) Build a team and develop team spirit among the team members.
- 4) Improve the interpersonal relationship skills.
- 5) Learn Problem solving and decision making skills.
- 6) Discuss a particular topic in a group and face the interview

Semester - VI

Abbreviation Subject Code MAN - Management (17601)

- 1) Get familiarized with environment related to business processes.
- 2) Know the management aspects of the organisations.
- 3) Understand Role & Responsibilities of a Diploma engineer.
- 4) Understand importance of quality improvement techniques.
- 5) Appreciate need and importance of safety in industries.
- 6) Understand process of Industrial finance and its management.
- 7) Know the latest trends in industrial management.

IFP Industrial Fluid Power (17608)

- 1) Identify various components of hydraulic & pneumatic systems.
- 2) Know the working principle of various components used in hydraulic & pneumatic systems.
- 3) Select appropriate components required for simple hydraulic and pneumatic circuits.
- 4) List the probable causes of faults or defects in the hydraulic & pneumatic circuits.

PER Production Engineering & Robotics (17609)

- 1) Understand importance of productivity and factors for improvement of productivity.
- 2) Know different production systems and modern trends in manufacturing systems.
- 3) Apply modern tools in production engineering like six sigma, kaizen, Poka yoke, etc.
- 4) Understand concept of robotics, limitations of human in difficult operation and applications of robots

- 1] Analyze the various modes of failure of machine components under different load patterns.
- 2] Design and prepare part and assembly drawings. 3] Use design data books and different codes of design.
- 4] Select standard components with their specifications from manufacturer's catalogue.
- 5] Develop drawings on CAD software.

Elective I Renewable Energy Sources & Management (17611)

- 1) Appreciate the need and importance of renewable energy
- 2) Analyze various Biomass Conversion processes.
- 3) Judge the Energy Saving Potential, Waste Heat Recovery, Energy Efficiency.
- 4) Understand the methodologies to execute preliminary energy audit

Elective II Refrigeration & Air Conditioning (17612)

- 1) Compare various types Refrigeration cycles
- 2) List various properties of different refrigerants and appreciate applications of Refrigerants with their ill effects on environment.
- 3) Identity various compartment & controls used in Refrigeration & Air Conditioning practice.
- 4) Able to assemble, dismantle the components of refrigeration systems along with trouble shoot the refrigeration systems

SMO Solid Modelling (17063)

- 1) Use appropriate commands
- 2) Develop solid models from 2 D drawing.
- 3) Use of printers / plotters.

IPR Project (17090)

- 1) Analyze the given problem.
- 2) Generate alternative solutions to the problem.
- 3) Compare & select feasible solutions amongst alternative generated.
- 4) Develop and manufacture new/modified equipments.
- 5) Acquire technical knowledge beyond curriculum

EDU Entrepreneurship Development (17099)

- 1) Appreciate the concept of Entrepreneurship
- 2) Identify entrepreneurship opportunity.
- 3) Develop entrepreneurial values and attitude.
- 4) Collect and use the information to prepare project report for business venture.
- 5) Develop awareness about enterprise management