

B.E. (MECH.) - III/IV-(I-SEMESTER)
MEC 311 – INDUSTRIAL ELECTRONICS

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.

Ses. : 30 Exam :70

Examination (Theory): 3hrs.

Credits : 4

Devices: Semi-conductor diode, Zener diode - Transistor - Silicon control rectifier. Rectifiers, Amplifiers, Oscillators, Cathode ray oscilloscope.

Industrial Applications: Poly-phase rectifiers - Control circuits - Motor speed control voltage control, Time delay relay circuits - Photo electric circuits. Resistance welding, inducting heating - Dielectric heating.

Servomechanism: Open loop and closed loop systems (Elementary treatment only).

Introduction to Digital Electronics: Fundamentals of digital electronics, Number system and codes, Logic gates, Boolean algebra, Arithmetic-logic units, Flip-flops, Registers and counters, Memories: ROM, PROM, EPROM and RAM.

Introduction to Microprocessors: The Intel-8085 microprocessor; Architecture, Instruction set, Execution of instructions, Addressing structures, Timing and machine cycles of 8085 and programming I/O operations, Interrupts, Serial input and serial output, Programming the I/O ports, Programming the timer.

Text Books:

1. Industrial Electronics by Mithal (Khanna Publications).
2. Digital Computer Electronics - An Introduction to Micro Computer by Albert Paul Malvino, Tata McGraw-Hill Publishing Co. Ltd., New Delhi-2.

References:

1. Engineering Electronics by Ryder-McGraw Hill.
2. Micro Processors by Leventhal.
3. Industrial Electronics by Bhattacharya, Tata Mc-Graw Hill.
4. Industrial Electronics and Control by S.K. Bhattacharya and S. Chatarjee, 1995 Ed., Tata Mc-Graw Hill Pub. Co. Ltd.

MEC 312 – MECHANICS OF SOLIDS – II

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.

Ses. : 30 Exam :70

Examination (Theory): 3hrs.

Credits : 4

Fixed Beams: Fixing moments for a fixed beam of uniform and variable sections, Effect of sinking support, slope and deflection.

Continuous beams: Analysis of continuous beam, Reactions at the supports, Effect of sinking of supports.

Energy Methods - Castigliano's theorems I & II applications.

Columns and Struts: Columns with one end free and the other fixed, Both ends fixed, One end fixed and other hinged, Limitation of Euler's formula, Column with initial curvature, Column carrying eccentric load, Laterally loaded columns with Central point load and Uniformly distributed load, Empirical formulae.

Bending of Curved Bars: Stresses in bars of circular, rectangular and trapezoidal sections.

Stresses due to rotation: Wheel rim, disc of uniform thickness, disc of uniform strength.

Thick cylinders subjected to internal and external pressure and compound cylinders.

Text Books:

1. Analysis of Structures, Vol. 1, 1993 edition, by Vazirani and Ratwani.
2. Chapter VI from Advanced Topics in Strength of Materials, by Prof. L.B.Shah and Dr.R.T.Shah.

References:

1. Strength of Materials, by Timoshenko.

MEC 313 ENGINEERING THERMODYNAMICS - II

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.

Ses. : 30 Exam :70

Examination (Theory): 3hrs.

Credits : 4

Properties of Pure Substance: Definition of pure substance, phase change of a pure substance, p-T (Pressure-Temperature) diagram for a pure substance, p-V-T(Pressure-Volume-Temperature) surface, phase change terminology and definitions, property Diagrams in common use, Formation of steam, Important terms relating to steam formation, Thermodynamic properties of steam and steam tables, External work done during evaporation, Internal latent heat, Internal energy of steam, Entropy of water, Entropy of evaporation, Entropy of wet steam, Entropy of superheated steam, Enthalpy-Entropy (h-s) charts for Mollier diagram, Determination of dryness fraction-Tank or bucket calorimeter, throttling calorimeter, separating and throttling calorimeter.

Gases and Vapour Mixtures and Vapor Power Cycles : Introduction, Daltons law and Gibbs-Dalton law, Volumetric Analysis of gas mixtures, Apparent molecular weight and gas constant, specific heats of gas mixture, Adiabatic mixing of perfect gases, Gas and vapour mixtures. Vapor power cycle- Rankine cycle- Reheat cycle- Regenerative cycle- Thermodynamic variables effecting efficiency and output of Rankine and Regenerative cycles- Improvements of efficiency, Binary vapor power cycle.**Steam Nozzles:** Type of nozzles- Flow through nozzles- Condition for maximum discharge- Nozzle efficiency- Super saturated flow in nozzles- Relationship between area velocity and pressure in nozzle flow- Steam injectors.

Steam Turbines: Classification of steam turbines- Impulse turbine and reaction turbine- Compounding in turbines- Velocity diagrams in impulse and reaction turbines- Degree of reaction- Condition for maximum efficiency of reaction turbines- Effect of friction on turbines constructional features governing of turbines.

Condensers: Classification of condenser- Jet, Evaporative and surface condensers- Vacuum and its measurement- Vacuum efficiency- Sources of air leakage in condensers- Condenser efficiency- Daltons law of partial pressures- Determination of mass of cooling water- Air pumps.

Refrigeration: Bell Coleman cycle, Vapor compression cycle- effect of suction and condensing temperature on cycle performance, Properties of common refrigerants, Vapor absorption system, Electrolux refrigerator. Principles of psychrometry and Air conditioning - Psychrometric terms, psychrometric process, air conditioning systems.

Text Books:

1. A Treatise on Heat Engineering by Vasandhani and Kumar.
2. Applied Thermodynamics-II by R. Yadav.
3. Fundamentals of Engineering Thermodynamics by E. Radhakrishna, PHI.

References:

1. Thermal Engineering, by R. K. Rajput.
2. Fluid Flow Machines, by M.S. Govinda Rao, Tata McGraw Hill publishing company Ltd.
3. Refrigeration and Air-conditioning, by C.P.Arora and Domkundwar.
4. Thermal Science and Engineering by D.S. Kumar, S.K. Kataria and Sons
5. Refrigeration and Air-conditioning, by Ahamadul Ameen, PHI.

MEC 314 - THEORY OF MACHINES - II

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.
Examination (Theory): 3hrs.

Ses. : 30 Exam : 70
Credits : 4

Gyroscopic Couple and Precessional Motion: Precessional and angular motion- gyroscopic couple- effect of gyroscopic couple on an aero plane and on a naval ship, stability of a four wheel vehicle moving in a curved path, stability of a two-wheel vehicle taking a turn.

Cams: Classification of followers and cams- Definitions- Motions of the follower- Uniform velocity- Simple harmonic motion- Uniform acceleration and retardation- Displacement- Velocity and acceleration diagrams. Construction of cam profiles- Cam with knife edged follower and roller follower- Cams with specified contours- Tangent cam with roller follower- Circular arc cam with flat faced follower.

Toothed gearing: Classification of toothed wheels, technical terms, conditions for constant velocity ratio of toothed wheels- Law of gearing- Velocity of sliding of teeth, forms of teeth- Length of contact, arc of contact, interference in involute gears, minimum number of teeth required on pinion to avoid interference- Methods of avoiding interference- Helical gears, Spiral gears- Efficiency of spiral gears.

Gear Trains: Types of gear trains- Simple, compound, reverted and epicyclic gear trains- Velocity ratio of epicyclic gear train- Tabular method- Algebraic method- Torques and tooth loads in epicyclic gear trains.

Balancing of Rotating and Reciprocating Masses: Balancing of a single rotating mass in the same plane and by two masses in different planes, balancing of several masses revolving in the same plane- Balancing of several masses revolving in different planes- Primary and secondary unbalanced forces of reciprocating masses, Partial balancing of unbalanced primary forces in a reciprocating engine, Partial balancing of locomotives- Effect of partial balancing of reciprocating parts of two cylinder locomotives- Variation of tractive force, Swaying couple and hammer blow- Balancing of primary and secondary forces in multi cylinder in-line engines- Direct and reverse cranks- Balancing of V-Engines.

Vibrations: Definitions- Types of vibrations- Natural frequencies of free longitudinal vibrations of systems having single degree of freedom- Equilibrium method- Energy method and Rayleigh's method. Frequency of damped vibration and forced vibration with damping- Magnification factor or dynamic magnifier.

Transverse and Torsional Vibrations: Natural frequency of free transverse vibrations due to point load and uniformly distributed load acting over a simply supported shaft- Transverse vibrations for a shaft subjected to number of point loads- Energy method- Dunkerley's method, Critical speed of a shaft. Natural frequency of free torsional vibrations- Free torsional vibrations of single rotor system, two rotor system, three rotor system and gear system.

Text Book:

1. Theory of Machines by R.S.Khurmi & J.K.Gupta.

Reference books:

3. Theory of Machines by Thomas Bevan.
4. Theory of Machines by S.S. Rattan.

MEC 315 - PRODUCTION DRAWING

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 3 Pr.
Examination (Theory): 3hrs.

Ses. : 30 Exam :70
Credits : 2

Introduction to Production drawing. Component drawing, Assembly drawing, Machine shop drawing, Pattern-shop drawing, Sheet metal drawing. Limits, Tolerances and Fits- Indication of surface roughness, preparation of process sheets.

Production drawings of Spur, Bevel and Helical gears, swivel bracket, main spindle, crank, revolving centre, jigs and fixtures.

Drawing of Dies. Sheet metal dies. Forging dies, stock strip layouts in sheet metal work, process layout for forge and press operations.

Cutting tool layout. Single point, multi point cutting tools for conventional and CNC machine tools.

Text Book:

1. A Text Book on Production Drawing by K.L.Narayana, P.Kannaiah and K.Venkata Reddy, New age international.

References:

1. Manufacturing technology Foundry, Forming and Welding by P.N.Rao, Tata McGraw Hill Publishing Company Ltd, New Delhi.
2. Production Technologies, HMT.

MEC 316 - ELECTIVE - I

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.
Examination (Theory): 3hrs.

Ses. : 30 Exam :70
Credits : 4

(A) REFRIGERATION AND AIR CONDITIONING

Principles of Refrigeration: Refrigeration and II law of thermodynamics- Methods of Refrigeration- Unit of Refrigeration- Applications of Refrigeration. Air cycle Refrigeration: Reversal Carnot cycle- Bell Colman cycle- Selection of Refrigeration systems for air crafts- Boot strap system- Regenerative cycle- Reduced ambient type- Comparisons of different systems.

Vapour Compression Refrigeration: Wet versus Dry compression- Effect of evaporator pressures and temperatures. Simple vapour compression Refrigeration cycle and its analysis. Advantages and disadvantages of vapour compression Refrigeration system over Air compression Refrigeration system- Methods of improving C.O.P.- Multi compression system- Multiple evaporators expansion valves- Flash inter cooler- Defrosting- Hot gas defrosting.

Classification of Refrigerants: Nomenclature- Properties- Secondary refrigerants- Selection of refrigerants- **Condensers-** Air cooled, Water cooled and evaporative type- Evaporators- Once through, flooded, shell and tube Baudelot cooler- **Expansion devices-** Capillary expansion device, Thermostatic expansion device.

Absorption Refrigeration System: Basic absorption system- Aqua ammonia absorption system- Li-Br absorption refrigeration system- Electrolux refrigeration- C.O.P. of absorption refrigeration system- Comparison of vapour compression and vapour absorption system. Steam jet refrigeration system and analysis- Advantages and limitation- Ejector compression system.

Psychrometry: Psychrometric properties and relations- Psy chart- Psy processes- Human comfort and comfort chart- Effective temperature and factors governing effective temperature. **Air conditioning:** Summer, Winter and year round air conditioning- Different types of Air conditioning load - By pass factor, RSHP, GSHF- Fresh air quantity- Cooling coils and Dehumidity- Air washers.

Text Books:

1. Refrigeration and Air conditioning, by C.P.Arora.
2. Refrigeration and Air conditioning, by P.L.Bellany.

References:

1. Refrigeration and Air conditioning, by Jordan R.C. and Priester G.B.
2. Principles of Refrigeration, by Dossat.
3. Refrigeration and Air-conditioning, by W.P.Stoecky.

(B) ADVANCED FOUNDRY AND WELDING TECHNOLOGY

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.
Examination (Theory): 3hrs.

Ses. : 30 Exam :70
Credits : 4

Moulding: Development of metal castings- Materials for moulding- Foundry sand control- Different types of cores- Core making processes- Materials for core making- Moulding and core making machines. Recent developments in core mould making- Cold set process- Investment process- Shell moulding- Hot box method- Shaw process. Vacuum moulding- moulding for mass production.

Melting and Solidification: Furnaces used in foundry for melting ferrous and nonferrous metals- principals of operation of cupola and charge calculations. Family of cast irons- Production of malleable and S.G. Irons- Methods of alloying and inoculants and their effects on the structure and properties of cast iron. Principles of Solidification: Nucleation- Crystal growth- Morphology and structure of cast metals and alloys- Pure metals- Single phase alloys and eutectics. Solidification in sand and chill moulds.

Foundry Mechanization: Layout for ferrous and nonferrous foundries- Description of equipment used for mechanization- Sand conditioners- Conveyors- Cranes- Equipment for handling moulds, Cores and molten metal- Knock out of moulds- Fettling equipment.

Special Welding Processes: Resistance welding processes- Spot, Seam, Projection, Flash butt welding - Machine cycle for resistance welding- Parameters in resistance welding- Electrodes for resistance welding – Solid State Welding: Cold welding – Forge welding - Ultrasonic welding Diffusion welding – Radiation welding: Laser Beam Welding, Electron Beam Welding – Automatic welding systems.

Weldability of Metals: Factors influencing weldability of metals- Welding of Cast steels, Carbon steels, Stainless steels and Cast iron. Weldability of Cu and its alloys, Al and its alloys- Ti and its alloys- Mg and its alloys- Temperature changes in welding and their effects on mechanical properties. Absorption of gases by welds and their effects- Residual stresses and distortion- Heat treatment of welded parts.

Welding Joints, Weld Symbols and Joint Design principles: Types of joints – types of welds – Variants of joints and weld types - Welding symbols – principles of weld joint design and evolving of good weld designs.

Text Books:

1. Foundry Technology, by Jain P.L.
2. Welding Engineering and Technology, by R.S. Parmar.

References:

1. Foundry Engineering, by Agarwal.
2. Foundry Engineering, by Taylor F. & Others.
3. Principles of Metal Castings, by Heine & Others.
4. Modern Welding Technology, by H.B. Cary.
5. Welding Technology, by Koenisburger.
6. Welding Metallurgy, S.Kou, 2nd edition, John Wiley and Sons, New York, NY (2003).

(C) WORK STUDY

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.

Ses. : 30 Exam :70

Examination (Theory): 3hrs.

Credits : 4

Introduction to work study: Scientific management – Productivity - Advantages of work study to management, Supervisors and workers.

Method Study: Introduction - Process charts, Critical Examination, Identification of key activities on process charts, Diagrams and Templates, Therbligs, Micro motion analysis, Memo motion study. Developing new method - Job survey report writing.

Principles of Motion Economy: Related to human body, work place, equipment.

Work Measurement: Work measurement techniques – Rating - Measuring the job – Allowances - Standard time - Synthetic data - Analytical estimating – PMTS ,Work factor, MTM, Activity sampling, Its applications.

Job Evaluation, Techniques of job evaluation - Merit rating - Incentive plans.

Ergonomics: Basics of Ergonomics, Anthropometry.

Text Books:

1. Introduction to Work Study - International Labour Organisation.
2. Elements of Work Study and Ergonomics by Dalela et al, Standard Publications.

References:

1. Motion and Time Study, by Barnes, John Wiely.

(D) POWER PLANT ENGINEERING

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.

Ses. : 30 Exam :70

Examination (Theory): 3hrs.

Credits : 4

Steam Power Plants: General Layout, Power plant cycles, Fuels-handling, storing, preparation and supply. Various stokers. Draft systems, chimney including calculations. Boilers: Construction and Heating surfaces. Mountings and accessories. High pressure and high duty forced circulation boilers land modern trends in Boiler design. Flue chambers and dampers. Steam piping–fittings–logging. Boiler performance, Flue gas testing and indicators (mechanical, electrical and chemical).

Internal Combustion Power Plants: Types of engines for power generation, Super charging, Exhaust heating fuel tanks and oil supply systems. Air supply for starting, Lubricating oils and systems of lubrication, Modern trends and design in diesel engines, Performance of engines, Care of diesel plants. Gas Turbine and other Propelled Power Plants: Introduction – Gas turbine plant– Classification and comparison of different types of gas turbine power plants – Components and different arrangements of the gas turbine plants – Indian gas turbine power plants–Governing system of gas turbine plant–Marine, Aero and Rocket Propulsion power plants.

Hydro Electric Plants: Hydrology, Hydrometric survey rainfall, Catchment, Reservoir, Run-off flow and fall, Storage and pondage, Losses due to percolation, Evaporation and transpiration. Mass–duration and flood discharge. Frequency studies and gauging. Different types of plants. Selection of site. Low, medium and high head plants and pumped storage plants. General layout of the plant – Head works, Spillways, Canals, Tunnels, Governing, Lubrication, Penstock, Anchorages and relief valves, different types of surge tanks, intakes, Gates and Valves.

Nuclear Power Plants: Classification of reactors, Thermal utilization, Fuels, Fuel moderator and coolant, Control and safety rods, Special properties of structural materials required, Induced radio-activity, Gas cooled reactors, Radiation hazards and shielding, Radio active waste disposal.

Direct Energy Conversion: Solar Energy–Introduction, Solar radiation, Solar collectors, Energy storage. Wind Energy–Wind mills. Thermo Electric–MHD and other non conventional energy sources. Power Plant Economics: Capacity factor, Load actor, Diversity factor, Peak load consideration, Factors governing capacity of plants. Cost of power plant, Cost of erection. Operating

& maintenance expenses, Cost of production, distribution of power & determination of rates.

Text Books:

1. Power Station Engineering and Economy by Benhaedt G.A.Skrotzki, William A. Vopat, MGH Book, Inc.
2. Heat Engineering, I.T. Shvets et al, MIR Pub Moscow.
3. A Course in Power Plant Engineering, S.C.Arora&S.Domdumwar.

References:

1. Solar Power Engineering by B.S. Magal, TMGHPub Co..
2. Solar Energy by S.P. Sukhatme, T MGH pub. Co.
3. Modern Power Plant Engineering by Joel Weisman, Roy Eckart, PHI.
4. A textbook of Power Plant Engineering by P.C. Sharma, S.K. Kataria&Sons, ND.
5. Fundamentals of Nuclear Power Engineering by D.K. Singhai, Khanna Pub.

(E) FINITE ELEMENT ANALYSIS

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th

Ses. : 30 Exam :70

Examination (Theory): 3hrs.

Credits : 4

Fundamental Concepts: Introduction, Historical background, Outline of presentation, Stresses and Equilibrium, Boundary conditions, Strain-Displacement relations, Stress-Strain relations, Plane stress, Plane strain problems, Temperature effects, Potential energy and equilibrium. The Rayleigh-Ritz method, Hamilton's principle. Galerkin's method, Saint Venant's principle.

One-dimensional Problems: Introduction, Finite element modeling, Coordinates and Shape functions. The potential energy approach. The Galerkin approach, Assembly of the global stiffness matrix- mass matrix and load vector, Treatment of boundary conditions, Quadratic shape functions, Temperature effects. Trusses: Introduction, Plane trusses, Three-dimensional trusses, Assembly of global stiffness matrix for the Banded and Skyline solutions.

Two-dimensional Problems Using Constant Strain Triangles: Introduction, Finite element modeling, Constant strain triangle, In plane and Bending, problem modeling and boundary conditions.

Axisymmetric Solids Subjected to Axisymmetric Loading: Introduction, Axisymmetric formulation, Finite element modeling, Triangular element, Problem modeling and boundary conditions.

Two-dimensional Isoparametric Elements and Numerical Integration: Introduction, The four-node quadrilateral, Numerical integration, Higher-order elements. Beams and Frames: Introduction, Finite element formulation, Load vector, Boundary considerations, Shear force and bending moment, Beams on elastic supports, Plane frames.

Text Book:

1. Introduction to Finite Elements in Engineering, by Tirupathi R. Chandrupatla, Ashok D.Belegundu (chapters 1 to 8 only).

References:

1. Introduction to Finite Element Method, by S.S.Rao
2. Finite Element Method, by O.C. Zienkiewicz.
3. Concepts and Applications of Finite Element Analysis, by Robert D. Cook.
4. Introduction to Finite Element Method, by J.N.Reddy.

(F) COMPUTER GRAPHICS

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week: 5 Th.

Ses. : 30 Exam :70

Examination (Theory): 3hrs.

Credits : 4

Geometry and line generation: Line segments, Pixels and frame buffers, Bresenham's algorithms: line, circle, ellipse generation.

Graphics primitives: Primitive operations, The display-file interpreter, Display-file structure, Display-file algorithms.

Polygons: Polygons representation, An inside test, Filling polygons, Filling with a pattern.

Transformations: Scaling transformations, Reflection and zooming, Rotation, Homogeneous coordinates and translation, Rotation about an arbitrary point.

Segments: The segment table, Segment creation, Closing a segment, Deleting a segment.

Windowing and clipping: The viewing transformation, Clipping, The clipping of polygons, Generalized clipping.

Three dimensions: 3D geometry, 3D primitives, 3D transformations, Parallel projection, Perspective projection, Isometric projections, Viewing parameters, Special projections.

Hidden surfaces and lines: Back-face removal, Back-face algorithms, The Painter's algorithm, Warnock's algorithm, Franklin algorithm, Hidden-line methods.

Light, color and shading: Point-source illumination, Shading algorithms, Shadows, Color models.

Curves and fractals: Curve generation, Interpolation, B splines, Curved surface patches, Bezier curves, Fractals, Fractal lines, Fractal surfaces.

References:

1. Computer Graphics - A Programming Approach by Steven Harrington, McGraw-Hill International Edition, 1987.
2. Schaum's Outline of Theory and Problems of Computer Graphics by Roy A. Plastock and Gordon Kalley, McGraw-Hill Companies, Inc., 1986.
3. Mathematical Elements for Computer Graphics by David F. Rogers and Adams.

MEC 317 - MECHANICAL ENGINEERING LAB-II

(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week : 3 Pr.

Ses. : 50 Exam : 50

Examination (Practical): 3hrs.

Credits: 2

1. Load test and smoke test on I.C. Engines.
2. Morse test on multi-cylinder engine.
3. Heat balance sheet on I.C. Engines.
4. Study of multi-cylinder engines and determination of its firing order.
5. Calculations of efficiencies of the given air compressor.
6. Determination of pressure distribution around the given (1) cylinder and (2) airfoil specimens kept in a uniform flow wind-tunnel.
7. Study of automobile mechanisms.
8. Verification of laws of balancing.
9. a) Determination of ratios of angular speeds of shafts connected by Hooke's joint.
b) Determination of the ratio of times and ram velocities of Withworth quick return motion mechanism.
10. To draw curves of slider displacement and crank angle and linear velocities w.r.t. time for a slider crank mechanism and compare with theoretical values.
11. To determine the relation of gyroscopic couple and compare with the theoretical values.
12. To draw the crank angle vs. pressure diagram for an I.C. engine using pressure transducer and cathode ray oscilloscope.

MEC 318 - MANUFACTURING TECHNOLOGY LAB - II
(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week : 3 Pr.
Examination (Practical): 3hrs.

Ses. : 50 Exam : 50
Credits: 2

1. Experiments on Lathe to establish the following curves
 - a) Depth of cut Vs Cutting force.
 - b) Feed Vs Cutting force.
 - c) Cutting speed Vs Cutting force.
2. Grinding of single point cutting tool as per given specifications (to check the tool angles).
3. Study of chip formations on shaping machine (with lead sample).
4. Torque measurement on drilling/milling machine.
5. Effect of speed and feed on surface roughness.
6. Measurement of cutting tool temperature in turning.
7. Sieve analysis to evaluate G.F.No.
8. Moisture and clay content test.
9. Green compression and shear test.
10. Shatter Index & Hardness Testing

MEC 319 – SOFT SKILLS LAB.
(Effective from the batch admitted during 2006-2007- Credit System)

Periods/week : 3 Pr

(Common for all Branches of Engineering)

Credits: 1

Communication:

Importance of communication
Non verbal communication
Personal appearance
Posture
Gestures
Facial expressions
Eye contact
Space distancing

Goal setting:

Immediate, short term, long term,
Smart goals, strategies to achieve goals

Time management:

Types of time
Identifying time wasters
Time management skills

Leadership and team management:

Qualities of a good leader
Leadership styles
Decision making
Problem solving
Negotiation skills

Group discussions:

Purpose (Intellectual ability, creativity, approach to a problem, solving, tolerance, qualities of a leader)

Group behavior, Analyzing performance

Job interviews:

Identifying job openings

Preparing resumes & CV

Covering letter

Interview (Opening, body-answer Q, close-ask Q),

Types of questions

Reference books:

1. 'Effective Technical Communications' by Rizvi M. Ashraf, McGraw-Hill Publication
2. 'Developing Communication Skills' by Mohan Krishna & Meera Banerji, Macmillan
3. 'Creative English for Communication' by N.Krishnaswami & T.Sriraman, Macmillan
4. 'Professional Communication Skills' by Jain Alok, Pravin S.R. Bhatia & A.M. Sheikh, S.Chand & Co.