



SCHEME OF STUDIES & EXAMINATIONS
Department: Mechanical Engineering – 3rd Semester

S. No.	Course No.	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	Practical			
1	MGT 201 B	ENGINEERING ECONOMICS (Common for all branches Except BT & BME)	4	-		25	75	-	100	4	3
	GES 201 B	(Gr-A) OR ENVIRONMENTAL STUDIES (Common for all branches) (Gr- B)	3	-		-	75*		75*	--	3
2	ME 201B	THERMODYNAMICS (ME, AER)	3	1		25	75	-	100	4	3
3	ME 203B	STRENGTH OF MATERIALS-I (ME, AER)	3	1		25	75	-	100	4	3
4	ME205B	ENGINEERING MECHANICS (ME, AE & AER)	3	1		25	75	-	100	4	3
5	ME207B	FLUID MECHANICS (ME, AER)	3	1		25	75	-	100	4	3
6	ME209B	MACHINE DRAWING	1	-	4	40	60	-	100	3	3
7	ME211B	STRENGTH OF MATERIALS- ILAB (ME, AER)	-	-	2	20		30	50	1	3
8	ME 213B	COMPUTER AIDED DRAFTING LAB	-	-	2	20		30	50	1	3
9	ME 215B	FLUID MECHANICS LAB (ME, AER)	-	-	2	20		30	50	1	3
10	GES 203B	ENVIRONMENTAL STUDIES FIELD WORK (Common for all branches) Gr- B)	-	-	-	-	-	25*	25*	-	
11	ME 217B	WORKSHOP (Common for all branches Except BT, AE)	--	--	2	50	--	--	50	2	3
Total											
			Gr-A	17	4	12	275	435	90	800	28
			Gr-B	16	4	12	250	360	90	700	24

Note:

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
- *The Environmental studies (GES-201 B & Environment Studies Field work (GES-203B) are compulsory & qualifying courses only.
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
- Electronics gadgets including Cellular phones are not allowed in the examination
- All the branches are to be divided into group 'A' and 'B' as per the suitability of the institute/college, so that there is an equitable distribution of teaching load in odd and even semesters.



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering– 3rd Semester

Subject:Engineering Economics

Subject Code: MGT 201B

Detailed Content

UNIT NO.1 Different Economics With Inter Relations

- Topic No.1: Introduction to various definitions of Economic
- Topic No.2: Nature of Economic problem, Micro and macro economics- their feature and scope
- Topic No.3: Production possibility curve
- Topic No.4: Economic laws and their nature, Relation between Science
- Topic No.5: Engineering Technology and Economics
- Topic No.6: Concept and measurement of utility, Law of Diminishing Marginal Utility
- Topic No.7: Law of equi-marginal utility – its practical application and importance

UNIT NO.2 Demand And Costs

- Topic No.8: Meaning of Demand, Individual and Market demand schedule
- Topic No.9: Law of demand, & shape of demand curve
- Topic No.10: Elasticity of demand & measurement of elasticity of demand, Factors effecting elasticity of demand
- Topic No.11: Practical importance & application of the concept of elasticity of demand
- Topic No.12: Various concepts of cost-Fixed cost, Variable cost, average cost, Marginal cost, Money cost, real cost
- Topic No.13: Opportunity cost.Shape of average cost, Marginal cost, total cost etc. in short run and long run.

UNIT NO.3 Production , Economy & Market

- Topic No.14: Meaning of production and factors of production
- Topic No.15: Law of variable proportions, & Law of Return to Scale
- Topic No.16: Lubrication principles, Bearing lubrication
- Topic No.17: Functions of lubricating system
- Topic No.18: Internet and External economics and diseconomies of scale
- Topic No.19: Meaning of Market, Type of Marker
- Topic No.20: Perfect Competition, Monopoly, Oligopoly, Monopolistic competition

UNIT NO.4 Supply , Eonomy And Globe

- Topic No.21: Supply and Law of Supply, Role of Demand & Supply in Price Determination
- Topic No.22: Effect of changes in Demand and supply on prices
- Topic No.23: Nature and characteristics of Indian economy
- Topic No.24: privatization – meaning, merits and demerits
- Topic No.25: Globalization of India economy – merits and demerits
- Topic No.26: Elementary Concept of WTO & TRIPS agreement
- Topic No.27: Monetary Policy & Fiscal Policy

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

TEXT BOOKS:

1. Ahuja H.L"Micro Economic Theory" S. Chand Publication, New Delhi
2. Dewett K.K "Modern Economic Theory" S. Chand Publication, New Delhi
3. Jain T.R, Grover M.L, Ohri V.K Khanna O.P,"Economics for engineers" V.K .Publication ,New Delhi

SUGGESTED BOOKS:

1. Jhingan M.L"Micro Economic Theory" S.Chand Publication ,New Delhi
2. Chopra P.N "Principle of Economics" Kalyani Publishers, Delhi
3. Mishra S.K "Modern Micro Economics" Pragati Publication Mumbai.



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering– 3rd Semester

Subject: Environmental Studies

Subject Code: GES 201B

Detailed Content

UNIT NO.1 Introduction To Environment

- Topic No.28: The Multidisciplinary nature of environmental studies
- Topic No.29: Definition, scope and importance
- Topic No.30: Need for Public awareness

UNIT NO.2 Natural Resources

- Topic No.31: Natural resources and associated problems
- Topic No.32: Renewable and Non-renewable resources
- Topic No.33: Forest resources: Use and over-exploitation
- Topic No.34: Deforestation, case studies, Timber exploitation, mining
- Topic No.35: Dams and their effects and forests tribal people
- Topic No.36: Water resources: Use and over-utilization of surface and ground water
- Topic No.37: Floods, Drought, conflicts over water ,Dams-benefits and problems
- Topic No.38: Mineral resources: Use and exploitation
- Topic No.39: Environmental effects of extracting ,And using mineral resources, case studies
- Topic No.40: Food resources: World food problems
- Topic No.41: Changes, caused by agriculture and Overgrazing
- Topic No.42: Effects of modern agriculture, fertilizer-pesticide problems
- Topic No.43: Water logging, salinity, case studies
- Topic No.44: Energy resources: Growing energy needs
- Topic No.45: Renewable and Non-renewable energy sources
- Topic No.46: Use of alternate energy sources; case studies
- Topic No.47: Land as a resource, land degradation
- Topic No.48: Man induced landslides
- Topic No.49: Soil erosion and desertification
- Topic No.50: Role of an individual in conservation of natural resources
- Topic No.51: Equitable use of resources for sustainable lifestyles

UNIT NO.3 Ecosystems

- Topic No.52: Concept of an ecosystem
- Topic No.53: Structure and function of an ecosystem
- Topic No.54: Producers, Consumers and decomposers
- Topic No.55: Energy flow in the ecosystem, Ecological Succession
- Topic No.56: Food chains, food webs and ecological pyramids
- Topic No.57: Introduction, types, characteristic features, structure and function of the Following eco-system:
 - A. Forest ecosystem
 - B. Grassland ecosystem
 - C. Desert Ecosystem
 - D. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans)

UNIT NO.4 Biodiversity And Its Conservations

- Topic No.58: Introduction – Definition: Genetic, species and ecosystem diversity
- Topic No.59: Biogeographically classification of India
- Topic No.60: Value of biodiversity: consumptive use, productive use
- Topic No.61: Social, Ethical aesthetic and option values
- Topic No.62: Biodiversity at global, National and local levels
- Topic No.63: India as a mega-diversity nation
- Topic No.64: Hot-spots of biodiversity
- Topic No.65: Threats : habitat loss, poaching of wildlife,Man-wildlife conflicts
- Topic No.66: Endangered and endemic species of India.

UNIT NO.5 ENVIRONMENTAL POLLUTION



Topic No.67: Definition, causes, effects and control, measures of: Air pollution, Water pollution, Soil pollution
Marine pollution, Noise pollution, Thermal Pollution Nuclear hazards

Topic No.68: Solid waste management: Causes effects and control, measures of urban and Industrial wastes

Topic No.69: Role of an individual in prevention of pollution

Topic No.70: Pollution case studies

Topic No.71: Disaster management: Floods, earthquake, cyclone and landslides

UNIT NO.6 SOCIAL ISSUES AND THE ENVIRONMENT

Topic No.72: From unsustainable to sustainable development

Topic No.73: Urban problems related to energy

Topic No.74: Water conservation, rain water harvesting, watershed management

Topic No.75: Resettlement and rehabilitation of people; its problems and concerns

Topic No.76: Environmental ethics: Issues and possible solutions

Topic No.77: Climate change, global warming, acid rain, ozone layer depletion, Nuclear accidents & holocaust, Case std.

Topic No.78: Wasteland reclamation, Consumerism and waste products

Topic No.79: Environment Protection Act, Air (Prevention and Control of Pollution Act,
Water (Prevention and Control of Pollution) Act Wildlife Protection Act, Forest Conservation Act

Topic No.80: Issues involved in enforcement of environmental legislation Public awareness

UNIT NO.7 HUMAN POPULATION AND ENVIRONMENT

Topic No.81: Population growth, variation among nations

Topic No.82: Population explosion – Family Welfare Programme Environment and human health, Human Rights

Topic No.83: Value Education, HIV/ AIDS, Woman and Child Welfare

Topic No.84: Role of Information Technology in Environment and human health. Case Studies

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

REFERENCES:

1. Agarwal, K.C. 2001, Environmental Biology, Nidi Pub. Ltd. Bikaner.
2. Bharucha, Franch, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380013, India .
3. Brunner R.C. 1989, Hazardous Waste Incineration, Mc. Graw Hill Inc. 480p.
4. Clark R.S., Marine Pollution, Slanderson Press Oxford (TB).
5. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Pub. House, Mumbai. 1195p.
6. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
7. Down to Earth, Centre for Science and Environment ®.
8. Gleick, H.P., 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security, Stockholm Env. Institute, Oxford Univ., Press 473p.
9. Hawkins R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R).
10. Heywood, V.H. & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
11. H & Bhosale, V.M. 1995, Environmental Protection and Laws, Himalaya Pub. House, Helhi 284p.
12. McKinney, M.L. & Schoch, RM 1996, Environmental Sciences Systems & Solutions, Web enhanced Edition 639p.
13. Mhaskar A.K., Mater Hazardous, Tekchno-Sciences Publications (TB).

Note:

1. Examiner will set eight questions. Students will be required to attempt five Questions.
2. The awards of this paper shall not be counted in the award of the Degree/DMC.



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering– 3rd Semester

Subject: Thermodynamics (Theory)

Subject Code: ME 201B

Detailed Content

UNIT NO 1: Basic Concepts, First Law Of Thermodynamics

- Topic No.1 Macroscopic and microscopic approaches, Definition of system and surrounding, Concept of control volume
- Topic No.2 Thermodynamic state, concepts of simple compressible substances
- Topic No.3 Process and cycle, thermodynamic processes and thermodynamic equilibrium
- Topic No.4 Zeroth law; thermodynamic properties and use of tables of thermodynamic properties
- Topic No.5 Thermodynamic concept of energy; Modes of work and heat transfer, The first law referred to cyclic and non-cyclic processes
- Topic No.6 Concept of internal energy of a system, Conservation of energy for simple compressible closed systems
- Topic No.7 Definitions of enthalpy and specific heats
- Topic No.8 Free expansion process, Conservation of energy for an open system, Steady and transient processes

UNIT NO.2 Second Law Of Thermodynamics, Exergy: Concept Of Reversible Work And Irreversibility

- Topic No.9 The directional constraints on natural processes
- Topic No.10 Kelvin- Planck and Clausius Statements and their Equivalence
- Topic No.11 Concept of reversibility; Carnot principle; Absolute thermodynamic temperature scale
- Topic No.12 Clausius Inequality, Entropy, change in entropy in various thermodynamic processes
- Topic No.13 T-ds relations, entropy balance for closed and open systems, Principle of increase-in-Entropy
- Topic No.14 Entropy generation, Third Law of Thermodynamics. Problems
- Topic No.15 Second law efficiency; Energy change of a system: closed and open systems
- Topic No.16 Energy transfer by heat, Work and mass, Energy destruction, Energy balance in closed and open systems

UNIT NO.3 Pure Substance And Phase, Introduction To Properties Of Mixtures And Phases

- Topic No.17 Phase transformation, solid-liquid-vapour equilibrium
- Topic No.18 Throttling and measurement of dryness fraction of steam, idea of a generalized chart and the law of corresponding states; concept of ideal gases and their equations of state. Problems
- Topic No.19 Dalton's model, equation of state, properties of ideal gas mixtures
- Topic No.20 Change in entropy on mixing; law of corresponding states and introduction to real-gas mixtures
- Topic No.21 Gibbs phase rule; air/water mixtures, psychometrics. Problems

UNIT NO.4 Thermodynamic Property Relations, Thermodynamics Of Reactive Systems

- Topic No.22 Maxwell relations; Clausius-Clapeyron equation; Difference in heat capacities
- Topic No.23 Ratio of heat capacities; Joule-Thompson coefficient and inversion curve
- Topic No.24 First law analysis; Internal energy and enthalpy of reaction; Enthalpy of formation; Second law analysis
- Topic No.25 Chemical equilibrium; Equilibrium constant for ideal-gas mixtures and its variation with temperature

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

Text Books:

1. Engineering Thermodynamics – P K Nag, Tata McGraw Hill
2. Engineering Thermodynamics – Jones and Dugan, PHI, New Delhi.

Reference Books :

Dhar, P.L., Engineering Thermodynamics - a generalized approach Elsevier, New



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering– 3rd Semester

Subject: Strength Of Materials –I (Theory)

Subject Code: ME 203B

Detailed Content

UNIT NO1 Simple Stresses & Strains, Compound Stresses & Strains

- Topic no 1: Concept & types of Stresses and strains, Poisson's ratio
- Topic no 2: Stresses and strain in simple and compound bars under axial loading
- Topic no 3: Stress strain diagrams, Hooke's law, Elastic constants & their relationships
- Topic no 4: Temperature stress & strain in simple & compound bars under axial loading
- Topic no 5: Concept of surface and volumetric strains, Two dimensional stress system
- Topic no 6: Conjugate shear stress at a point on a plane
- Topic no 7: Principal stresses & strains and principal-planes, Mohr's circle of stresses, Numerical

UNIT NO2 Shear Force & Bending Moments, Fixed Beams

- Topic no 8: Definitions, SF & BM diagrams for cantilevers
- Topic no 9: Simply supported beams with or without over-hang
- Topic no 10: Calculation of maximum BM & SF and the point of contra-flexure under (i) concentrated loads
- Topic no 11: (ii) uniformly distributed loads over whole span or a part of it
- Topic no 12: (iii) combination of concentrated loads and uniformly distributed loads
- Topic no 13: (iv) uniformly varying loads
- Topic no 14: (v) application of moments, relation between the rate of loading, the shear force and the bending moments
- Topic no 15: Deflections, reactions and fixing moments with SF & BM calculations & diagrams for fixed beams under
- Topic no 16: (i) concentrated loads, (ii) uniformly distributed load and
- Topic no 17: (iii) a combination of concentrated loads & uniformly distributed load

UNIT NO3 Torsion Of Circular Members, Columns & Struts

- Topic no 18: Torsion of thin circular tube, Solid and hollow circular shafts
- Topic no 19: Tapered shaft, Stepped shaft & composite circular shafts
- Topic no 20: Combined bending and torsion, Equivalent torque, effect of end thrust. Numericals
- Topic no 21: Column under axial load, Concept of instability and buckling, Slenderness ratio
- Topic no 22: Derivation of Euler's formulae for the elastic buckling load
- Topic no 23: Eulers, Rankine, Gordon's formulae Johnson's empirical formula for axial loading columns
- Topic no 24: Eccentric compression of a short strut of rectangular & circular sections, Numerical

UNIT NO4 Bending & Shear Stresses In Beams, Slope & Deflection:

- Topic no 25: Bending stresses in beams with derivation & application to beams of circular, rectangular, I, T
- Topic no 26: Composite beams, Shear stresses in beams with combined bending
- Topic no 27: Torsion & axial loading of beams. Numericals
- Topic no 28: Relationship between bending moment, Slope & deflection, Mohr's theorem
- Topic no 29: Moment area method, method of integration
- Topic no 30: Macaulay's method, calculations for slope and deflection of (i) cantilevers and (ii) simply supported beams With or without overhang under concentrated load, Uniformly distributed loads or combination of Concentrated and uniformly distributed loads, Numericals

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

Text Books:

1. Strength of Materials – G. H. Ryder - Macmillan, India
2. Strength of Materials– Andrew Pytel and Fredinand L. Singer, Addison – Wesley

Reference Books:

1. Strength of Materials – Popov, PHI, New Delhi.
2. Strength of Materials - A Rudimentary Approach – M.A. Jayaram, Sapna Book House, Bangalor



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering– 3rd Semester

Subject: Engineering Mechanics (Theory)

Subject Code: ME 205B

Detailed Content

UNIT NO1 Review Of Basic Force Systems

- Topic no 1: Dimensions and units of mechanics
- Topic no 2: Idealization of mechanics, laws of mechanics
- Topic no 3: Vector algebra review, moment of a force about a point and axis
- Topic no 4: The couple and couple moment, addition and subtraction of couples
- Topic no 5: Moment of a couple about a line
- Topic no 6: Translation of a force to a parallel position, resultant of a force system, Problems

Equilibrium

- Topic no 7: Introduction, free body diagram, control volumes
- Topic no 8: General equations of equilibrium
- Topic no 9: Two point equivalent loading, static in-determinacy
- Topic no 10: Simple truss
- Topic no 11: Method of joints, method of sections, Problem

UNIT NO2 Properties Of Surfaces, Moments And Products Of Inertia

- Topic no 12: First moment of an area and the centroid
- Topic no 13: Principal axes, formal definition of inertia quantities
- Topic no 14: Relation between mass-inertia terms and area-inertia terms
- Topic no 15: Translation of coordinate axes, transportation properties of the inertia terms
- Topic no 16: A brief introduction to tensors, the inertia of ellipsoid and principal moments of inertia, Problem

UNIT NO 3 Kinematics Of Particles And Rigid Bodies

- Topic no 17: Velocity and acceleration in path and cylindrical coordinates
- Topic no 18: Motion of a particle relative to a pair of translating axes
- Topic no 19: Translation and rotation of rigid bodies
- Topic no 20: Chasles theorem, moving references
- Topic no 21: Velocity and acceleration for different references, inertia and coriolis forces. Problems

UNIT NO4 Particle Dynamics, Energy & Momentum Methods

- Topic no 22: Newton's law for rectangular coordinates & cylindrical coordinates
- Topic no 23: Rectifier translation, central force motion
- Topic no 24: Newton's law for path variables
- Topic no 25: Work energy equations, work energy equations for a systems of particles
- Topic no 26: Linear and angular momentum equations for a systems of particles. Problems

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

Text Book:

1. Engineering Mechanics - Statics & Dynamics by I.H. Shames, PHI, New Delhi.
2. Engineering Mechanics – Timoschenko.

Reference Books:

1. Statics & Dynamics by J.L. Meriam, JohnWiley & Sons (P) Ltd. New York.
2. Statics & Dynamics by Beer & Johnson, MGH, New Delhi.



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering– 3rd Semester

Subject: Fluid Mechanics (Theory)

Subject Code: ME – 207B

Detailed Content

UNIT NO1: Fluid Properties And Fluid Statics, Manometers, Vortex Motion

- Topic no 1: Concept of fluid and flow, ideal and real fluids, properties of fluids, Newtonian and non-Newtonian fluids
- Topic no 2: Pascal's law, hydrostatic equation, hydrostatic forces on submerged plane and curved surfaces
- Topic no 3: Stability of floating and submerged bodies, Metacentric height, relative equilibrium
- Topic no 4: Simple & differential manometers
- Topic no 5: Free vortex flow, Forced vortex flow

UNIT NO2: Fluid Kinematics, Fluid Dynamics

- Topic no 6: Eulerian and Lagrangian description of fluid flow
- Topic no 7: Stream, streak and path line
- Topic no 8: Types of flows, flow rate and continuity equation
- Topic no 9: Differential equation of continuity in cylindrical and polar coordinates
- Topic no 10: Rotation, vorticity and circulation
- Topic no 11: Stream and potential functions, flow net
- Topic no 12: Concept of system and control volume
- Topic no 13: Euler's equation, Bernoulli's equation
- Topic no 14: Venturimeter, orifices, orificemeter
- Topic no 15: Mouthpieces, Notches and weirs
- Topic no 16: Kinetic and momentum correction factors, Impulse momentum relationship and its applications

UNIT NO3: Viscous Flow, Flow Through Pipes

- Topic no 17: Flow regimes and Reynold's number
- Topic no 18: Navier-Stokes equation of motion
- Topic no 19: Relationship between shear stress and pressure gradient
- Topic no 20: Uni-directional flow between stationary parallel plates
- Topic no 21: Parallel plates having relative motion
- Topic no 22: Movement of piston in a dashpot
- Topic no 23: Power absorbed in bearings, major and minor losses in pipes, Hagen-Poiseuille law
- Topic no 24: Hydraulic gradient and total energy lines
- Topic no 25: Series and parallel connection of pipes, branched pipes; equivalent pipe, power transmission through pipes

UNIT NO4: Boundary Layer Flow, Flow Around Immersed Bodies

- Topic no 26: Boundary layer concept, displacement, momentum and energy thickness
- Topic no 27: Von-Karman momentum integral equation
- Topic no 28: Laminar and turbulent boundary layer flows
- Topic no 29: Boundary layer thickness, skin friction coefficient
- Topic no 30: Drag on a flat plate, boundary layer separation
- Topic no 31: Drag force, Lift & drag coefficient, streamlined and bluff bodies
- Topic no 32: Lift and drag on a cylinder and an airfoil

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100



PM

COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society
Approved by AICTE, Ministry of HRD, Govt. of India,
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

Text Books:

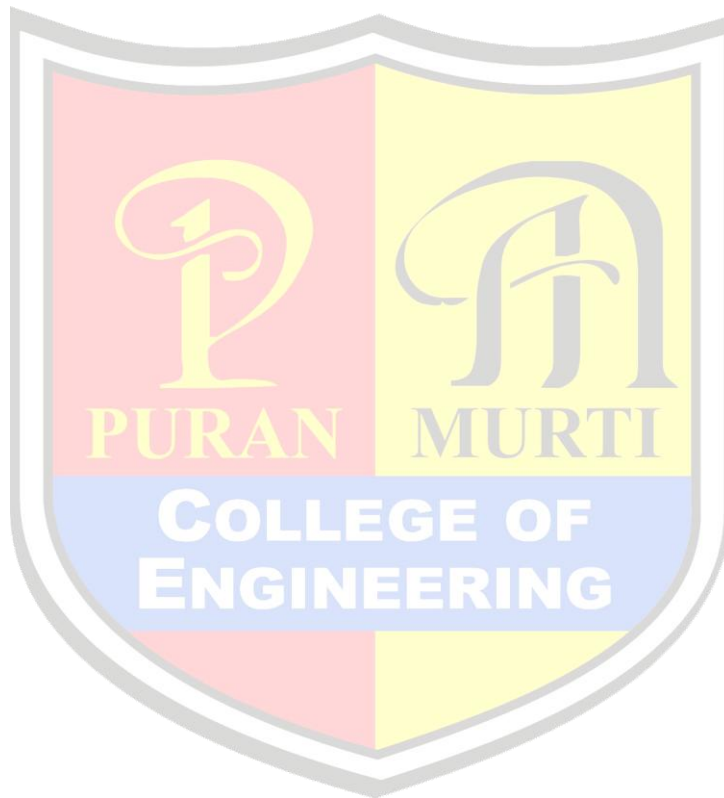
1. Fluid Mechanics and Machinery– CSP Ojha, R Berndthsson and P N Chandramouli, Oxford University Press
2. Mechanics of Fluids – I H Shames, Mc Graw Hill

References Books:

1. Introduction to Fluid Mechanics and Fluid Machines – S.K. Som and G. Biswas, TMH
2. Fluid Mechanics and Fluid Power Engineering – D.S. Kumar, S.K. Kataria and Sons
3. Fluid Mechanics– John F Douglas, Janusz M. Gasiorek, John A, Swaffield, Peason Education

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.





SYLLABUS: B Tech (ME)

Department: Mechanical Engineering– 3rd Semester

Subject: Machine Drawing (Theory)

Subject Code: ME 201B

Detailed Content

Unit No1:

- Topic no 1: Introduction to BIS Specification SP : 46 – 1988
- Topic no 2: Code of Engineering drawing – Machining symbols and surface Texture
- Topic no 3: Theory of conventional Tolerancing
- Topic no 4: Geometric Dimensioning and Tolerancing
- Topic no 5: Toothed Gear: Gear terminology, I.S
- Topic no 6: Convention representation of assembly of spur gears
- Topic no 7: Helical gears
- Topic no 8: Bevel gears, worm and worm wheel

Unit No2:

- Topic no 9: Orthographic views from isometric views of machine parts / components. Dimensioning
- Topic no 10: Sectioning. Exercises on Keys
- Topic no 11: Cotter and Joints
- Topic no 12: Shaft Couplings;
- Topic no 13: Pipe Joint and Fitting
- Topic no 14: Pulleys; Bearings
- Topic no 15: Hangers and Brackets
- Topic no 16: Valve and Cocks
- Topic no 17: Automotive Parts. Assembly drawing with sectioning and bill of materials from given detailed drawings of Assemblies of miscellaneous Machine Parts
- Topic no 18: Lathe Tail Stock; Four Jaw Chuck
- Topic no 19: Tool Post
- Topic no 20: Tool Holder
- Topic no 21: Screw Jack
- Topic no 22: Machine Vice
- Topic no 23: Pipe Vice
- Topic no 24: Pedestal Bearing
- Topic no 25: Steam Stop Valve
- Topic no 26: Drilling Jigs
- Topic no 27: Milling Fixture and Hand Drill

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

Text Books:

1. A Text Book of Machine Drawing : P S Gill , S K Kataria & Sons
2. Machine Drawing - N D Bhatt , Charotar Publishing House.

Reference Books:

1. Machine drawing : N Sidheshwar, Kannaieh, V S Sastry, TMH., New Delhi.

NOTE:

For class work, the students shall be assigned to prepare at least ten drawing sheets covering all units and each topic of the syllabus. For theory examination, the examiner will set a question paper containing total four questions, two questions from each unit covering each topic of the syllabus; students are required to attempt two questions at least one from each unit. The question from unit I will carry 20 marks each. Question from unit II will carry 40 marks.



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering – 3rd Semester

Subject: Strength Of Materials Lab

Subject Code: ME 211B

Detailed Content

List of Experiments:

1. To study the Brinell hardness testing machine & perform the Brinell hardness test.
2. To study the Rockwell hardness testing machine & perform the Rockwell hardness test.
3. To study the Vickers hardness testing machine & perform the Vickers hardness test.
4. To study the Erichsen sheet metal testing machine & perform the Erichsen sheet metal test.
5. To study the Impact testing machine and perform the Impact tests (Izod & Charpy).
6. To study the Universal testing machine and perform the tensile test.
7. To perform compression & bending tests on UTM.
8. To perform the shear test on UTM.
9. To study the torsion testing machine and perform the torsion test.
10. To draw shear Force, Bending Moment Diagrams for a simply Supported Beam under Point and Distributed Loads.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	50
		2	1	20	30	3 hours	

Note:

1. At least ten experiments are to be performed in the semester.
2. At least eight experiments should be performed from the above list. Remaining two experiments may either be performed from the above list or designed & set by the department as per the scope of the syllabus.



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering – 3rd Semester

Subject: Computer Aided Drafting Lab

Subject Code: ME 213B

Detailed Content

List of Experiments:

1. Start a New Drawing, Name the Drawing Sheet, Set the Drawing Units, Drawing Precision, Drawing Limits, Grid, Snap and Draw the Margin and Title Block as given in Exercise Problems Sheet.
2. Redraw the 2D Figures including dimensions as given in Exercise Problems Sheet using various Fundamental of 2D commands in Draw and Modify Toolbars
3. Redraw the 2D Figures including dimensions as given in Exercise Problems Sheet using various Advance commands in Osnap, Grip, Block, Layers, Attributes, Edit Toolbars
4. Draw Front, Top, and Right Side Orthogonal view of each of the objects in given Exercise Problems Sheet using View Port commands
5. Draw 3D Surface Models of the Objects as given in Exercise Problems Sheet, using fundamental of 3D Drawing and Surface commands
6. Draw 3D Solid Models of the Objects as given in Exercise Problems Sheet, using fundamental of 3D Drawing and Solid commands
7. Draw 3D Models of different types of Bolts and Nuts with Washers as given in Exercise Problems Sheet.
8. Draw 3D Models of different types of Keys, Cotters and Joints as given in Exercise Problems Sheet.
9. Draw 3D Models of Simple Machine and Automobile Components as given in Exercise Problems Sheet.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		2	1	40	60	3 hours	100

Note:

- 1 For class work, the students should be assigned to prepare at least ten drawing sheets covering all units and each topic/experiment/exercise of the syllabus.
- 2 For practical examination, the examiner should set a question paper containing total three questions, one questions from each unit covering all units and each topic/experiment/exercise of the syllabus; students are required to attempt all the three questions.



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering – 3rd Semester

Subject: Fluid Mechanics Lab

Subject Code: ME 215B

Detailed Content

List of Experiments:

1. To determine coefficient of discharge of an orifice meter.
2. To determine the coefficient of discharge of Notch (V / Rectangular types).
3. To determine the friction factor for the pipes.
4. To determine the coefficient of discharge of venturimeter.
5. To determine the coefficient of discharge, contraction & velocity of an orifice.
6. To verify the Bernoulli's Theorem.
7. To find critical Reynolds number for a pipe flow.
8. To determine the meta-centric height of a floating body.
9. To determine the minor losses due to sudden enlargement, sudden contraction.
10. To determine loss coefficient for valves and bends.
11. To show the velocity and pressure variation with radius in a forced vortex flow.
12. To determine the coefficient of discharge of mouthpiece.
13. Flow visualization demonstration.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	50
		2	1	20	30	3 hours	

Note:

1. At least ten experiments are to be performed in the semester.
2. At least eight experiments should be performed from the above list. Remaining two experiments may either be performed from the above list or designed & set by the department as per the scope of the syllabus (ME207B).



SYLLABUS: B Tech (ME)

Department: Mechanical Engineering–3rd Semester

Subject: Environmental Studies Field Work

Subject Code: GES 203B

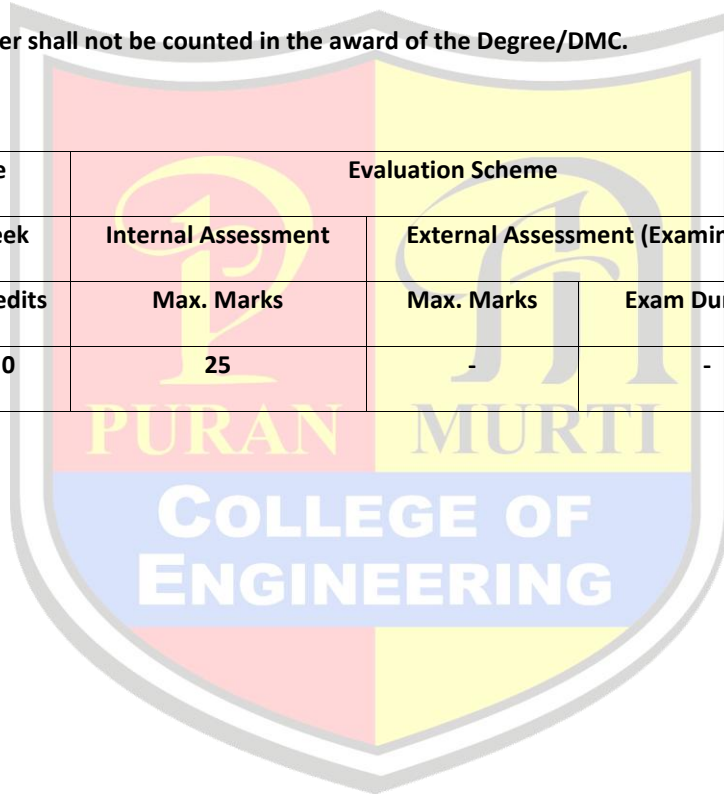
Detailed Content

Field Work:

- Visit to a local area to document environmental assets – river/ forest/ grassland/ hill/ mountain.
- Visit to a local polluted site-Urban/ Rural/ Industrial/ Agricultural.
- Study of common plants, insects, birds.
- Study of simple ecosystems – pond, river, hill slopes, etc. (Field work equal to 5 lectures hours).

Note: The awards of this paper shall not be counted in the award of the Degree/DMC.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	-	0	25	-	-	25





SYLLABUS: B Tech (ME)

Department: Mechanical Engineering – 3rd Semester

Subject: Workshop Lab

Subject Code: ME 217 B

Detailed Content

List of Experiments:

1. To study and prepare different types of jobs on machine tools (lathe, shaper, planer, slotter, milling, drilling machines).
2. To prepare lay out on a metal sheet by making and prepare rectangular tray, pipe shaped components e.g. funnel.
3. To prepare joints for welding suitable for butt welding and lap welding.
4. To study various types of carpentry tools and prepare simple types of wooden joints.
5. To prepare simple engineering components/ shapes by forging.
6. To prepare mold and core assembly, to put metal in the mold and fettle the casting.
7. To study of CNC lathe, CNC Milling and EDM Machines.
8. Any work assigned in electrical workshop, computer hardware/language lab, electronics workshop, biomedical hardware automobile workshop etc.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
		2	2	50	-	3 hours	

This student will prepare job(s)/project as an individual or in a group using workshop in house infrastructure.

The student shall submit a typed report.

Training will be evaluated on the spot out of 20 marks.

The report will be evaluated in the III Semester by a Committee consisting of two teachers.

The student will interact with the committee through presentation to demonstrate his/her learning. The basis of evaluation will primarily be the knowledge and exposure of students on different kinds of Machines/instruments/tools/ skills etc. The committee will evaluate out of 30 marks.

The committee shall submit the awards out of 50 marks.