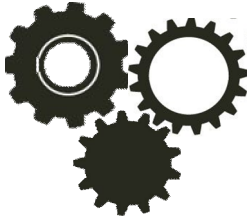
**VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS)**
**Ibrahimbagh, Hyderabad-31**

Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

**Sponsored by**
**VASAVI ACADEMY OF EDUCATION**
**Hyderabad**

# STUDENT HAND BOOK

## Academic Regulations (Autonomous) and Syllabi of SECOND YEAR B.E (MECHANICAL) w.e.f 2016-17



## DEPARTMENT OF MECHANICAL ENGINEERING

**+91-40-23146060, 23146061**
**Fax: +91-40-23146090**
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## DEPARTMENT VISION

To nurture and establish global leadership in the field of mechanical engineering and develop competent human resources with values and ethics.

## DEPARTMENT MISSION

To nurture an environment of research, innovation and knowledge through the latest teaching-learning practices in mechanical engineering.

## PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

- To have an in-depth technical knowledge in the chosen field of specialization in mechanical engineering
- To demonstrate commitment to solve technical problems and to work in multi-disciplinary teams
- To exhibit the skills to contribute to their organization and make well informed decisions
- To advance professionally through publications in the form of reports and technical papers.
- To have lifelong learning.

## ABOUT THE COLLEGE

**VISION**

*Striving for a symbiosis of technological excellence and human values*

Established in 1981 by Vasavi Academy of Education under the stewardship of Late Sri Pendekanti Venkata Subbaiah, a veteran statesman of independent India and by a few eminent people from different walks of life Vasavi College of Engineering represents a rich tradition of excellence in technology based education in a stimulating environment. From a modest beginning with just three undergraduate programs, viz., B.E. degree programs in Civil, Mechanical and Electronics & Communication Engineering, with dedicated efforts for over **33** years, it has now grown into a mighty center of learning with excellent and well-developed infrastructural facilities, offering 6 undergraduate programs, viz., B.E. in Civil, Mechanical, Electrical & Electronics, Electronics & Communication Engineering, Computer Science & Engineering, and Information Technology, in addition to a 3-year postgraduate program in Computer Applications (MCA), and 2-Year Postgraduate Programmes in CSE, ECE, EEE and Mechanical Engineering.

**MISSION**

*To arm the young brains with competitive technology and nurture the holistic development of the individuals for a better tomorrow.*

All the undergraduate (B.E) programs were accredited by National Board of Accreditation (NBA) for the academic years 2013-2015. The college sought fresh approval for NBA accreditation for two eligible PG programs and MCA program. The college has been recognized under 12(B) and 2(f) sections of the University Grants Commission (UGC).

The college has been granted ***autonomy by the University Grants Commission***, New Delhi and Osmania University, Hyderabad for all the programs it offers for a period of six years with effect from 2014-15.



The College has 185 highly qualified and experienced faculty members consisting of Professors, Associate Professors and Assistant Professors and around **158** technical and supporting staff. The college has very good infrastructural facilities which go beyond the curriculum requirements. The college offers value-added courses in GIS, CAD/CAM, DSP, VLSI, Networking, J2EE and communication skills to bridge the gap between the curriculum and the requirements of the Industry. Finishing school has been made part of curriculum from the second year onwards to improve the skills of the students.

**QUALITY POLICY**

*Education without quality is like a flower without fragrance. It is our earnest resolve to strive towards high standards of teaching, training and developing human resources.*

A Research & Development (R&D) Cell is established by personnel from industry / research organization to encourage the faculty and the students in acquiring additional qualifications and knowledge.

This Cell also facilitates the faculty for interaction with industry/research organizations in getting sponsored research projects. In addition, the college extends consultancy in various fields of engineering and technology. The Center for Counseling and Placement at Vasavi College of Engineering provides personal and career-related support to its students. The educational experience at the college is enlivened and enriched by an array of extra-curricular activities to fulfill the cultural and emotional needs of students.

A good number of ranks in university examinations are secured by our students every year. The all-round development of a student is achieved by exposing him/her to the outside world in a systematic and well planned manner. Just not marks and ranks, but also ethics and morals are incorporated into psyche of a student at Vasavi in a cautious way. This unification of tradition and technology makes Vasavi a place for paradise of learning.

**ACADEMIC RULES AND REGULATIONS**
**FOR FOUR YEAR B.E DEGREE COURSE**
**w.e.f 2015-16 Academic Year**

## 1. RULES OF PROMOTION

**ATTENDANCE:** The ***minimum aggregate attendance*** percentage for BE program ***is 75%***. On medical grounds 65% attendance with valid medical certificate will be considered. A candidate who did not meet above attendance requirements is not eligible to appear for the semester examinations.

***A student is allowed to use medical condonation facility only 4 (four) times in the entire period of 8 semesters in the span of 4 years B.E program.***

## 2. ASSESSMENT AND EVALUATION SYSTEM:

There will be continuous and comprehensive evaluation of students. The distribution of sessional (internal) and semester examination marks for ***B.E programme*** are given below:

***SESSIONALS EXAMS (internals)***
***Theory:*** **30 Marks**

- **20** Marks each for two internal examinations in a semester and 10 marks for assignments and quizzes etc together.
- **Average of two tests** will be considered for calculating internal exams marks to which assignment/quiz marks will be added for obtaining total CIE marks.
- Every student should secure a **minimum of 40% aggregate marks in the internal exams.**

**Lab: 25 Marks**

**15** marks for day-to-day laboratory class work which will be awarded based on the average of all experiments.
- 10 marks for the internal examination.



***SEMESTER EXAMS***

- Semester theory examinations will be conducted for 70 marks. A student should secure a minimum of 40% marks in each subject for a pass.

- Semester laboratory examinations will be conducted for 50 marks. A student should secure a minimum of 50% marks for a pass.

*In addition, a student shall secure a minimum of 40% marks in a theory subject and 50% marks in lab from sessional exams and semester examinations put together for a pass.*

## 3. PROMOTION RULES TO NEXT HIGHER CLASS

| S No | Semester /Class | Conditions to be fulfilled for |
|---|---|---|
| 1 | From 1/4 BE, I-SEM to 1/4 BE, II-SEM | Regular course of study of 1/4 B.E, I-SEM and 40% aggregate sessional marks in I-SEM |
| 2 | From 1/4 BE, II-SEM to 2/4 BE, I SEM | (a) Regular course of study of 1/4 B.E-II SEM and<br>(b) Must have secured at least 50% of total credits prescribed for 1/4 B.E. |
| 3 | From 2/4 BE, I-SEM to 2/4 BE, II-SEM | Regular course of study of 2/4 BE, I-SEM and 40% aggregate sessional marks in II- SEM |
| 4 | From 2/4 BE, II-SEM to 3/4 BE, I SEM | (a) Regular course of study of 2/4 BE II SEM<br>(b) Must have secured at least 50% of total credits prescribed for 2/4B. E and passed in all the subjects 1/4 B.E. |
| 5 | From 3/4 BE, I-SEM to 3/4 BE, II-SEM | Regular course of study of 3/4 B.E, I-SEM, and 40% aggregate sessional marks in I- SEM |
| 6 | From 3/4 BE, II-SEM to 4/4 BE, I SEM | (a) Regular course of study of 3/4 B.E, II-SEM<br>(b) Must have secured at least 50% of total credits prescribed for 3/4 B.E and passed in all the subjects 2/4 B.E. |
| 7 | From 4/4 BE, I-SEM to 4/4 BE, II-SEM | (a) Regular course of study of 4/4 B.E, I-SEM and 40% aggregate sessional marks in II-SEM |

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**
**SCHEME OF INSTRUCTION AND EXAMINATION w.e.f 2016-17**
**DEPARTMENT OF MECHANICAL ENGINEERING**
**B.E. II YEAR - I-SEMESTER**

| S. No. | Syllabus Ref.No. | SUBJECT | Scheme of Instruction | | | | Scheme of Examination | | | Credits |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Periods per Week | | | | | Maximum Marks | | |
| | | | L | T | D | P | Duration in Hours | SEM Exam | Sessi–onals | |
| **THEORY** | | | | | | | | | | |
| 1 | ME2010 | Machine Drawing | 2 | - | - | 4 | 3 | 70 | 30 | 4 |
| 2 | ME2020 | Thermodynamics | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 3 | ME2030 | Metallurgy & Material Science | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 4 | ME2090 | Mechanics of Fluids | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 5 | CE2060 | Mechanics of Materials | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 6 | MA2010 | Mathematics –III | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 7 | HS2170 | Finishing School: Communication Skills in English -I | 4 | - | - | - | 3 | 70 | 30 | 2 |
| **PRACTICALS** | | | | | | | | | | |
| 1 | ME2011 | Metallurgy Lab | - | - | - | 3 | 3 | 50 | 25 | 2 |
| 2 | CE2041 | Mechanics of Materials Lab | - | - | - | 3 | 3 | 50 | 25 | 2 |
| | | **TOTAL** | **26** | | | **10** | **–** | **590** | **260** | **25** |
| **INTER DISCIPLINARY COURSES OFFERED BY MECH TO EEE** | | | | | | | | | | |
| **THEORY** | | | | | | | | | | |
| 1 | ME2070 | Principles of Mechanical Engineering | 4 | - | - | - | 3 | 70 | 30 | 3 |



**WITH EFFECT FROM THE ACADEMIC YEAR 2016-17**

**DEPARTMENT OF MECHANICAL ENGINEERING**
**SYLLABUS FOR B.E. 2/4 I-SEMESTER**
**MACHINE DRAWING**

| | | |
|---|---|---|
| Instruction : 4+2Periods /week | Sem End Exam Marks : 70 | Subj Ref Code: ME 2010 |
| Credits : 4 | Sessional Marks: : 30 | Duration of Sem Exam : 3 Hrs |

| Course Objectives | Course Outcomes |
|---|---|
| The objectives of this course are to learn:<br>• Drawing Fundamentals.<br>• Orthographic Projections of machine components.<br>• Geometric proportions of Machine elements.<br>• Preparation of Assembly Drawings | On completion of the course the student will be able to:<br>• interpret the conventions used in machine drawing and conversion of pictorial views into orthographic views.<br>• sketch the machine elements with suitable proportions.<br>• prepare the assembly drawings from the detailed part drawings. |

**I. INTRODUCTION:**

Format of drawing sheet, title block and part list, conventions of drawing lines and dimensions, First and third angles projections, scales as per ISO standards, convention for sectional views. Orthographic projections including sectional views of simple machine elements.

**II. DRAWING OF VARIOUS VIEWS OF:**

**Fastners**: Screw threads, metric and BSW threads, square threads and multi start threads. Nuts, bolts, washers, set screws, lock nuts and foundation bolts.
**Rivited Joints:** Forms and proportions of rivet-heads, different views of riveted lap and butt joints.
**Shaft joints:** Cotter joint and knuckle joint.
**Keys and shaft couplings:** Muff, flanged, flexible, universal and oldhams coupling.
**Shaft bearing:** Solid and bush bearing, plummer block, foot step bearing.
**Pipe joints:** Flanged joint, socket and spigot joint.

**III. ASSEMBLY DRAWINGS OF:**

**Engine parts:** Piston, stuffing box, cross head for vertical and horizontal engine, connecting rod, eccentric.
**Machine elements:** Lathe tail stock, machine vice, single tool post.
**Valves:** Steam stop valves, safety valves, screw jack.

**Learning Resources:**

1. N.D. Bhatt, Machine Drawing, Charotar Pub. house, Anand, New Delhi, 28th ed, 1994.
2. N. Siddeshwar, Machine Drawing, TMH Publishing Co. Ltd., 5th ed, 1994
3. K.L. Narayana, P.Kannaiah, K.Venkat Reddy, Machine Drawing, New Age International (P) Ltd., 2nd edition 1999.
4. K.C. John, Text book of machine Drawing, PHI Learning, 2010.
5. Ajeet Singh, Machine Drawing includes Autocad, TMH Education, 2nd Edition, 2014

## DEPARTMENT OF MECHANICAL ENGINEERING
## SYLLABUS FOR B.E. 2/4 I-SEMESTER
## THERMODYNAMICS

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Refer Code : ME 2020 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The objectives of this course are to:<br>• acquire knowledge of the fundamentals of thermodynamics and temperature scales<br>• apply First law of thermodynamics to various thermal engineering devices<br>• explain second law of thermodynamics and concept of entropy<br>• explain the various properties of steam<br>• apply the knowledge of thermodynamics to air standard cycles, vapour power cycle and analyze the properties of gas mixtures. | On completion of the course the student will be able to:<br>• apply the knowledge of thermodynamics to temperature scales.<br>• solve the practical thermodynamic problems by applying first law and steady flow energy equation<br>• analyze the problems on heat engines, refrigeration and entropy by applying second law of thermodynamics<br>• compute problems in steam engineering applications<br>• evaluate the performance of air standard cycles and vapor power cycle |

**UNIT– I**

**Introduction:** What is Thermodynamics? Microscopic and Macroscopic approach of thermodynamics system, surroundings; property intensive and extensive properties, Measurement of temperature, Zeroth law of thermodynamics, Temperature Scales, ideal gas and ideal gas thermometer, quasi static process, Thermodynamics Equilibrium.

**UNIT– II**

**First law of Thermodynamics:** Statement of First Law, Heat and work interactions, Thermodynamics work and Internal energy, Energy as property of system, First Law applicable to Closed system, Thermodynamic processes and calculation of work, Heat transfer, and internal energy, Heat as Path Function, first law analysis of flow processes, Calculation of work done during flow processes, Limitation of first law.

**UNIT– III**

**Second Law of Thermodynamics:** Physical description of second law, Kelvin– Planck and Clausis statement of Second Law of thermodynamics, Equivalence of Kelvin– Planck and Clausius statements, Reversible and irreversible processes, Carnot Theorems, Clausius Inequality, Calculation of entropy change during various thermodynamic processes, principle of Entropy increase, T– S diagrams, Concept of exergy and anergy, Helmholtz and Gibb's functions.



**UNIT– IV**

**Thermodynamic properties of Fluids:** Properties of pure substances, Concept of phase change, Graphical representation of pressure, Volume and Temperature; (PVT), P-H diagrams, Properties of steam, Use of steam Tables and Mollier diagram, Thermodynamic relations involving entropy, Enthalpy, Internal Energy, Maxwell relations and Clapeyron equation.

**UNIT– V**

**Air standard and Vapour power cycles:**

Air standard cycles– Otto, Diesel, Dual Combustion Cycle, Brayton Cycle and Sterling Cycle.

Vapour power cycles- Simple Rankine cycle

**Mixture of Gases:** Mole fraction and mass fraction, Partial pressure and Dalton's Law, Amagat-leduc Law of partial volumes, Relation between partial pressure, mole fraction and volume fraction; Gas constant, molecular mass and specific heats of the gas mixtures; relation between volumetric and gravimetric analysis.

**Learning Resources:**

1. P.K.Nag, Engineering Thermodynamics, McGraw Hill Education, 5th Edition, 2014.
2. Y.Cengel & Boles, Thermodynamics: An Engineering approach, McGraw Hill, 7th Edition, 2011.
3. E Rathakrishnan, Fundamentals of Engineering Thermodynamics, PHI Second Edition, Feb 2013.
4. Y.V.C.Rao, An Introduction to Thermodynamics, University Press, 2nd Edition, 2010.
5. PL Ballaney, Thermal Engineering, Khanna Publishers, New Delhi, 25th Ed., 2015.
6. D.S. Kumar, Engineering Thermodynamics, S K Kataria and Sons, First Edition 2013.

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17

## DEPARTMENT OF MECHANICAL ENGINEERING
## SYLLABUS FOR B.E. 2/4 I-SEMESTER
## METALLURGY AND MATERIAL SCIENCE

| | | |
|---|---|---|
| Instruction : 4 Periods/week | Sem Exam Marks : 70 | Subject Ref Code : ME 2030 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The objectives of this course are to:<br>• describe various crystal defects that occur in metals<br>• identify various types of loading and failures of metals<br>• construct phase diagrams from the given data for various binary alloys<br>• identify and Apply different heat treatment processes to metals<br>• describe the methods of extracting metals | On completion of the course the student will be able to:<br>• describe the relationship between crystal defects and mechanical properties<br>• estimate the behavior of metals under different loading conditions<br>• explain property changes in metals and alloys using phase diagrams<br>• assess property changes in metals due to different heat treatment processes<br>• apply different methods to extract metals |

**UNIT – I**

Defects in crystals, point, line, surface and volume defects. Mechanisms of plastic deformation: slip and twinning, Effect of dislocations on plastic deformation, Critical resolved shear stress, Hall– Petch equation, cold working and hot working, strain Hardening and Bauchinger effect. Recovery, Recrystallization, Grain growth and its effect on mechanical properties of metals.

**Fracture:** Type of fracture in metals, Ductile and brittle fracture, Griffith theory of brittle fracture, crack propagation, modes of fracture, ductile-brittle transition.

**UNIT – II**

**Fatigue:** Types of fatigue loading, Experimental determination of fatigue strength (RR– Moore Test),S–N Curve, Structure of fatigue fractured specimen, Effect of metallurgical variables on fatigue of metal, Low cycle fatigue, Cumulative fatigue damage, Factors to be considered for the improvement for the fatigue life.

**Creep:** Creep Test, Creep curve, Creep strength, Creep deformation mechanisms, difference between creep curve and stress-rupture curve.

**Diffusion:** Fick's laws of diffusion, Application of diffusion theory in Mechanical Engineering.



**UNIT – III**

**Structure of Alloys:** Construction and interpretation of Thermal equilibrium diagram of binary nonferrous alloys, Study of Eutectic, Eutectoid, Peritectic, Peritectoid and monotectic reactions. Iron– Iron Carbide Equilibrium diagram, Construction and interpretation.

**Plain Carbon Steels:** types, properties and applications

**Cast Irons:** types, properties and applications.

**UNIT –IV**

**Heat Treatment:** Purpose of heat treatment, Annealing, Normalising, Hardening, Tempering, Construction and interpretation of T.T.T curve. Austempering and Martempering. Cryogenic treatment, Case Hardening: Carburising, Nitriding, Carbo–nitriding, Flame Hardening, Induction Hardening, brief introduction of Age Hardening.

**UNIT – V**

**Introduction to Extractive Metallurgy:** Method of production of pig Iron by blast furnace, Cast Iron by Cupola furnace, Method of production of steel by Bessemer Convertor, L.D. Process, Electric Arc process. Modern steel making process by Electric slag refining, method of production of copper and aluminum.

**Alloy Steels:** Effects of alloying elements like Nickel, Chromium, Manganese, Silicon and Tungsten and Titanium. Study about Stainless steels, HSS, Maraging steels, Hadfield steel, Brass, Bronze, Invar, Duralumin and Ti Alloy (Ti– 6Al– 4V) – their composition and properties.

Brief introduction to powder metallurgy.

Definition and applications of composite materials.

**Learning Resources:**


1. V. Raghavan, Material Science and Engineering, Prentice Hall of India Ltd., 4th Edition, 1994.
2. S.H. Avner, Introduction to Physical Metallurgy, Tata McGraw Hill, 2nd Edition, 1997.
3. William D. Callister and David G. Rethwisch, Materials Science and Engineering: An Introduction, John Wiley and Sons Ltd, 9th Edition, 2014
4. S.P. Nayak, Engineering Metallurgy and Material Science, Charotar Publishing House, 6th Edition, 1995.
5. E. Dieter, Mechanical Metallurgy, Metric Editions, Tata McGraw Hill, 3rd Edn., 1997
6. William F Smith, Javad Hashemi, Ravi Prakash, Material Science and Engineering, McGraw Hill Education, 5th Edition, 2014

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17

## DEPARTMENT OF MECHANICAL ENGINEERING
## SYLLABUS FOR B.E. 2/4 I-SEMESTER
### MECHANICS OF FLUIDS

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Ref Code: ME 2090 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hrs |

| Course objectives | Course outcomes |
|---|---|
| The objectives of this course are to:<br>**1** **analyze** forces on a submerged body in a static fluid.<br>**2** **explain** the importance of various types of fluid flows<br>**3** **know** the dynamics of fluid flows and to **underline** the principles of conservation equations as applied to fluid motions.<br>**4** **study** analytical solutions to variety of simplified problems under flow through pipes<br>**5** **study** the concepts of boundary layer and possibility of flow separation on different bodies. | On completion of the course the student will be able to:<br>**1** **determine** forces on a surface that are submerged in a static fluid.<br>**2** **apply** mathematical knowledge to predict the characteristics of a fluid flow<br>**3** **analyze** fluid flow problems with the use of the momentum and energy equations in engineering applications.<br>**4** **determine** flow rates, pressure changes, minor and major head losses for flows through pipes.<br>**5** **compute** drag and lift coefficients using the theory of Boundary Layer. |

**UNIT-I**

**Properties of fluids:** Definition of fluid and concept of continuum. Fluid properties; pressure, specific gravity, density, specific weight, specific volume, dynamic and kinematic viscosity. Classification of fluids: ideal and real fluids, vapour pressure. Measurement of pressure, use of pressure measuring devices such as piezo, differential manometers and transducers
Fluid Statics: Total pressure, centre of pressure, total pressure on plane surface, total pressure on horizontal plate, total pressure on vertical plate, total pressure on curved surface.

**UNIT-II**

**Fluid Kinematics:** Control mass & control volume approach, Reynolds Transport Theorem; General concepts of path lines, stream lines, streak lines and stream tubes. Classification of fluid flow: steady and unsteady, uniform and non-uniform, laminar and turbulent, rotational and irrational, one-, two- and three- dimensional flows. Definition and properties of stream function, velocity potential function, and use of flow nets.



**NIT-III**

**Fluid Dynamics:** Continuity equation and momentum equation in 3-D Cartesian coordinates, energy of a fluid body, potential energy and potential head, pressure energy and pressure head, kinetic energy and kinetic head, energy equation. Derivation of Euler's and Bernoullis' equations, and their applications, venturi meter, orifice meter, pitot tube and hotwire anemometer. Impulse momentum equation, forces on a pipe bend.

**UNIT-IV :**

**Laminar and Turbulent Flow through Pipes:** Distinction between laminar and turbulent flows; Reynold's number and its significance. Upper and lower critical values of Reynold's numbers for flow in pipes. Development of laminar and turbulent flow in circular pipes. Hagen-Poiseuille equation; frictional losses in pipes. Darcy's equation. Estimation of Darcy's friction factor. Empirical formulae and Moody's chart.

**UNIT-V :**

**Boundary Layer Theory:** development of laminar and turbulent boundary layers on a flat plate, pressure gradient, and phenomenon of separation and control measures. Flow around a cylinder at rest, rotational flow around a cylinder at rest, Fluid flow over an aerofoil, lift and drag forces and coefficients; circulation and Magnus effect. Boundary layer thickness – displacement, energy, momentum: derivation.

**Learning Resources:**


1. Modi P.N. and Seth S.M., *Hydraulics and Fluid Mechanics including Hydraulics Machines*, Standard Book House, Delhi, 20th Ed., 2015.
2. Dr. D.S. Kumar, *"Fluid Mechanics and Fluid Power Engineering"* S.K. Kataria & Sons, 8th Ed., Re-print 2014
3. Frank M White, "*Fluid Mechanics*", Tata McGraw-Hill, 7th Edition, 2012
4. Robert W. Fax, Philip J. Pritchard, Alan T. McDonald "*Introduction to Fluid Mechanics*", Wiley India Edition. (Wiley Student Edition Seventh 2011).
5. Bansal R.K., *Fluid Mechanics and Hydraulic Machines*, Lakshmi Publications, 9th Ed., 2010.


**Online Resources:**

1. http://nptel.ac.in/courses/112105171/
2. http://nptel.ac.in/courses/112106190/
3. http://nptel.ac.in/video.php?subjectId=105101082
4. http://web.mit.edu/hml/ncfmf.html
5. http://ocw.uci.edu/courses/engineering_mae_130a_intro_to_fluid_mechanics.html

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17

**DEPARTMENT OF CIVIL ENGINEERING**

**SYLLABUS FOR B.E. 2/4 I-SEMESTER**

**MECHANICS OF MATERIALS**

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Ref Code : CE 2060 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course objectives | Course outcomes |
|---|---|
| ***In this subject the students will*** | ***Upon the completion of this course sudents will be able to:*** |
| • examine and interpret basic concepts of strength of materials and analyze statically determinate and indeterminate structures to compute axial stresses, strains and deformations.<br>• analyze simple beams subjected to various types of loading and plot shear force and bending moment diagrams analytically and graphically and compute bending stresses.<br>• define and analyze shear stresses in beams and plot shear stress distribution across cross section of beams<br>• define and analyze problem of columns subjected to direct and bending stresses and predict the effect of eccentricity of loading on stresses by solution of numerical examples<br>• investigate the behaviour of thin and thick cylinders subjected to internal and external pressure and apply the concepts to the solution of example problems | • express his understanding of the basic concepts and principles of strength of materials and solve problems of composite sections for axial stresses and strains and thermal effects and problems of statically determinate and indeterminate structures.<br>• construct shear force and bending moment diagrams for beams subjected to various types of loading (analytically and graphically) and compute stresses and strains in bending and shear in the cross section of beams subjected to transverse loading.<br>• compute direct and bending stresses in columns and beams subjected to eccentric loading.<br>• compute internal forces in space trusses by method of tension coefficients<br>• compute stresses in thin cylinders and thick cylinders subjected to internal and external pressure. |

**UNIT-I** :

**Stresses and Strains:** Definitions, types of stresses and strains. Elasticity and plasticity. Hooke's law. stress-strain diagrams for engineering materials. Modulus of elasticity. Poisson's ratio. Relationship between elastic constants. Linear and volumetric strains. Bars of uniform strength. Temperature stresses. Compound bars.

**UNIT-II** :

**Shear Force and Bending Moment:** Bending moment and shear force diagrams for cantilever, simply supported beams and beams with overhangs carrying point and uniformly distributed loads. Relationship between intensity of loading, shear force and bending moment. Simple theory of bending. Moment of resistance. Modulus of section.



**UNIT-III :**

**Shear Stresses in Beams:** Distribution of shear stresses in rectangular, I- and T-, standard steel and hollow sections. Compound stresses, principal stresses and strains. Mohr's circle of stress.

**UNIT-IV :**

**Deflections:** Slope and deflections by the method of double integration in cantilever, simply supported beams and beams with over hangs subjected to point loads and uniformly distributed loads.

**Torsion:** Derivation of torsion formula for circular sections. Torsional stresses, angle of twist, power transmission, effect of combined bending and torsion. Close coiled and laminated springs.

**UNIT-V :**

**Cylinders:** Stresses in thin and thick cylinders with internal and external pressures. Hoop and longitudinal stresses. Stresses in compound cylinders.

**Direct and bending stresses;** Core of rectangular, circular, I- and T-sections.

**Columns and Struts:** Euler and Rankine formulae for axial load applications. Secant and Perry formulae for eccentrically loaded columns.

**Learning Resources:**


1. S. Ramamrutham R. Narayanan, *Strength of Materials*, 16th Ed, Dhanpat Rai Publishing Company, New Delhi, 2011
2. Bansal R.K, A text book of Strength of Materials, Laxmi Publications, New Delhi, 2010
3. Rajput RK, *Strength of Materials*, 4th Edition S. Chand Publications, New Delhi 2006
4. Junnarkar SB, Mechanics of Structures (Volume I & II), Charotar Publishing House, Anand 2002
5. Pytel and F. L. Singer, Strength of Materials, Harper & Row, Fourth Edition, New York, 1998
6. Subramanian R, *Strength of Materials, 2nd Edition,* Oxford University Press, 2010
7. Ferdinand P Beer et. Al., *Mechanics of Materials,* McGraw Hill, 2008

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17

## DEPARTMENT OF MATHEMATICS
## SYLLABUS FOR 2/4 B.E. I- SEMESTER
## MATHEMATICS – III

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Ref Code: MA 2010 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hrs |

| COURSE OBJECTIVES | COURSE OUTCOMES |
|---|---|
| *In this subject the students will* | *Upon the completion of this course students will be able to* |
| 1. ***Study*** the Fourier series, conditions for expansion of function and half range series<br>2. ***Formulate*** and solve linear and nonlinear partial differential equations and apply partial differential equations to engineering problems viz., wave, heat and Laplace's equations.<br>3. ***Study*** the methods to solve equations, apply numerical methods to interpolate, differentiate and integrate functions and to solve differential equations using numerical methods and solve systems of equations.<br>4. *Understand* Random variables Probability Distributions, Statistics and their applications.<br>5. *Understand* how to fit a curve to a given data, how Correlation between variables can be measured. | 1. ***Expand*** any function which is continuous, discontinuous, even or odd in terms of its Fourier series.<br>2. ***Find t***he Partial differential equations by eliminating arbitrary constants and functions and solve linear, nonlinear Partial differential equations and also will be able solve wave, heat and Laplace's equations in engineering problems.<br>3. ***Solve*** algebraic and transcendental equations using Bisection method Regula-Falsi, Newton-Raphson, apply numerical methods to interpolate, differentiate functions, solve systems of equations and solve differential equations using numerical methods.<br>4. ***Apply*** various probability distributions to solve practical problems, to estimate unknown parameters of populations and apply the tests of hypotheses.<br>5. ***Solve*** problems on how fitting of a curve to given data using curve fitting, and also to find co-efficient of correlation and to determine regression lines and their applications. |

**UNIT –I (8 classes)**

**Fourier Series :** Introduction to Fourier series – Conditions for a Fourier expansion – Functions having points of discontinuity – Change of Interval - Fourier series expansions of even and odd functions - Fourier Expansion of Half- range Sine and Cosine series.

**UNIT –II (15 classes)**

**Partial Differential Equations and its Applications:** Formation of first and second order Partial Differential Equations - Solution of First Order Equations – Linear Equation - Lagrange's Equation, Non-linear first order equations - Charpit's method



**Applications of Partial Differential Equations**: Classification of second order Partial Differential Equations- Method of Separation of Variables - Solution of One **D**imensional Heat Equation - One Dimensional Wave Equation – Two Dimensional Heat Equation - Laplace's Equation.

**UNIT-III (15 classes)**

**Numerical Methods:** Solution of Algebraic and Transcendental equations**-**Bisection method - Regula Falsi method- Newton-Raphson Method - Interpolation- Newton's Forward and Backward Interpolation Formulae - Lagrange's Interpolation Formula - Newton's Divided Difference Formula - Numerical Differentiation -Interpolation approach- Numerical Solutions of Ordinary Differential Equations - Taylor's Series Method - Euler's Method - Runge-Kutta Method of $4^{th}$ order (without proofs).

**UNIT-IV (12 classes)**

**Probability and Statistics**: Random Variables - Probability Distribution function for Discrete and Continuous Random variables - Expectation – Variance – Moments -Moment Generating Function- Poisson and Normal Distributions – Testing of Hypothesis - Tests of Significance - t-test - F- test -$\chi^2$ - test for small samples.

**UNIT-V (6 classes) Curve Fitting:** Curve fitting by the Method of Least Squares **-** Fitting of Straight line –- Regression - Lines of Regression - Correlation – Karl Pearson's Co-efficient of Correlation.

**Learning Resources :**


1. Jain R.K. & Iyengar S.R.K., *Advanced Engineering Mathematics*, Third Edition, Narosa Publications, 2007.
2. Grewal B.S, *Higher Engineering Mathematics*, $40^{th}$ Edition, Khanna Publishers.
3. Grewal B.S, *Numerical Methods*, Khanna Publishers.
4. Gupta & Kapoor, *Fundamentals of Mathematical Statistics*, Sultan Chand & Sons, New Delhi.
5. Kreyszig E, *Advanced Engineering Mathematics,* $8^{th}$ Edition, John Wiley & Sons Ltd, 2006.
6. Bali N.P. & Manish Goyal, *A text book of Engineering Mathematics,* Laxmi Publication.
7. Sastry S.S., *Numerical Analysis*, PHI Learning Ltd.

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17

## DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

## SYLLABUS FOR B.E. 2/4 I-SEMESTER

## FINISHING SCHOOL: COMMUNICATION SKILLS IN ENGLISH-I

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Ref Code : HS 2170 |
| Credits : 2 | Sessional Marks: 30 | Duration of Sem Exam :3 Hours |

| Course Objective | Course Outcome |
|---|---|
| • The four major skills of language learning, listening, speaking, reading and writing provide the right key to success.<br><br>• The main objective of this finishing school curriculum is to involve content for all the above mentioned four skills in teaching English and to get students proficient in both receptive and productive skills | • Respond to questions and Engage in an informal conversation.<br>• Narrate a message/story/incident, both verbally and in writing.<br>• Describe an event/a session/ a movie/ an article.<br>• Respond to others while being in a casual dialogue.<br>• comprehend facts given and respond in an appropriate manner.<br>• Construct sentences in a coherent form<br>• Provide explanations<br>• Recognize and list the key points in a topic/message/article.<br>• Participate in group and forum discussions by providing factual information, possible solutions, and examples.<br>• Debate on a topic by picking up the key points from the arguments placed.<br>• Provide logical conclusions to the topics under discussion.<br>• Prepare, present, and analyze reports |

**UNIT I – FUNDAMENTALS OF COMMUNICATION**

**Competencies:**

- Basic conversational ability.
- Write e-mails introducing themselves & their purpose

**Topics covered**

Greeting and Introductions
Small Talk
Recalling

**Topic Level Details**

**Greeting & Introductions**

**Competencies:**

- Greeting appropriately
- Introducing themselves, a friend
- Responding to simple statements and questions both verbally and in writing
- Seeking introduction from others about themselves or about any topic.
- Writing an email with appropriate salutation, subject lines, self-introduction, and purpose of mail.



**Small Talk**

**Competencies:**

- Identifying the topic of conversation.
- Speaking a few sentences on a random list of topics
- Reading simple information like weather reports, advertisements
- Seeking clarifications.

**Recalling**

**Competencies:**

- State takeaways from a session or conversations

**UNIT II : NARRATIONS AND DIALOGUES**

**Competencies:**

- Framing proper phrases and sentences to describe in context
- Speaking fluently with clarity and discrimination
- Responding to others in the dialogue.

**Topics covered**

Paraphrasing
Describing

**Topic Level Details**

**Paraphrasing**

**Competencies:**

- Listen for main ideas and reformulating information in his/her own words
- Draw appropriate conclusions post reading a passage.
- Writing an email confirming his/her understanding about a topic

**Describing**

**Competencies:**

- Speaking, Reading, and Writing descriptive sentences and paragraphs.

**UNIT-III: RATIONAL RECAP**

**Competencies:**

- Organizing and structuring the communication
- Detailing a topic
- Summarizing a topic.

**Topics Covered:**

Organizing
Sequencing
Explaining
Summarizing

**Topic Level Details**

**Organizing**

**Competencies:**

- Organizing the communication based on the context and audience

**Sequencing**

**Competencies:**

- Structuring the content based on the type of information.

**Explaining**

**Competencies:**

- Explaining a technical/general topic in detail.
- Write an email giving detailed explanation/process

**Summarizing**

**Competencies:**

- Recapitulating

**UNIT-IV: PROFESSIONAL DISCUSSIONS AND DEBATES**

**Competencies:**

- Analytical and Probing Skills
- Interpersonal Skills

**Topics Covered:**

Discussing

Debating

**Topic Level Details**

**Discussing**

**Competencies:**

- Thinking
- Assimilating

**Debating**

**Competencies:**

- Comprehending key points of the debate and note decisive points including supporting details.
- Construct a logical chain of arguments and decisive points.
- Writing a review about a product by providing reasons, causes, and effects



**UNIT -V: DRAWING CONCLUSIONS AND REPORTING**

**Competencies:**

- Reasoning skills - Coherent and logical thinking
- Reporting and Analyzing skills.

**Topics Covered:**

Concluding

Reporting

**Topic Level Details**

**Concluding**

**Competencies:**

- Analyzing the points discussed.
- Connecting all points without gaps.
- Identifying clinchers.
- Communicating the decisions

**Reporting**

**Competencies:**

- Reporting an incident
- Writing/Presenting a project report

## DEPARTMENT OF MECHANICAL ENGINEERING
## SYLLABUS FOR B.E. 2/4 I-SEMESTER
## METALLURGY LABORATORY

| | | |
|---|---|---|
| Instruction : 3 Periods / week | Sem Exam Marks : 50 | Subject Ref Code : ME 2011 |
| Credits : 2 | Sessional Marks : 25 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The course will enable the students to:<br>• outline the general procedure followed for preparation of the metallographic samples<br>• prepare metallographic samples for observation<br>• identify micro structures of various samples of metals<br>• conduct heat treatment for steel samples<br>• examine micro structures using metal analyzer | At the end of the course students should be able to:<br>• describe the relationship between microstructure and properties of various metals<br>• assess property changes in steels due to different heat treatment processes |

### List of Experiments:

1. Study of General Procedure for Specimen preparation and Metallurgical Microscope.
2. Preparation of Mounted samples with the help of mounting press
3. Metallographic study and analysis of Low and Medium Carbon Steels
4. Metallographic study and analysis of Eutectoid and High Carbon Steel
5. Metallographic study and analysis of Stainless steel and High Speed Steel
6. Metallographic study and analysis of White and Gray Cast iron
7. Metallographic study and analysis of Malleable and Spheroidal cast iron
8. Metallographic study and analysis of Non– Ferrous Alloys–Copper, Aluminum
9. Metallographic study and analysis of $\alpha$– Brass, $\alpha$– $\beta$– Brass
10. Metallographic study and analysis of Bronze and Al– Si alloy
11. Study of Microstructure and measurement of Hardness of plain carbon steel before and after the following Processes: Annealing and Normalizing
12. Study of Microstructure and measurement of Hardness of plain carbon steel before and after the following Processes: Hardening, Hardening and Tempering
13. Measurement of hardenability using Jominy End Quench Test
14. Study of Microstructure characteristic by Image Analyzer.

**Note**: Minimum 12 experiments to be conducted





## DEPARTMENT OF CIVIL ENGINEERING
## SYLLABUS FOR B.E. 2/4 I-SEMESTER
## MECHANICS OF MATERIALS LABORATORY

| | | |
|---|---|---|
| Instruction : 3 Periods /week | Sem Exam Marks : 50 | Subject Ref Code : CE2041 |
| Credits : 2 | Sessional Marks : 25 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| ***In this subject the students will***<br>• determine the properties of materials under the action of various loads.<br>• learn the ability to work in a team and make effective presentations. | ***Upon the completion of this course students will be able to:***<br>• determine young's modulus of materials of beams by conducting deflection test.<br>• assess the quality of materials by conducing hardness test and impact test.<br>• learn the operation of universal testing machine (utm).<br>• determining modulus of rigidity of materials by conducting torsion test and spring test.<br>• practice working as a team member and make effective presentations. |

1. Determination of Young's modulus by conducting Deflection test on cantilever beam
2. Determination of Young's modulus by conducting Deflection test on simply supported beam
3. Izod Impact test
4. Direct tension test on metal rods
5. Brinnel's and Rockwell's hardness tests
6. Compression test on brittle and ductile materials
7. Determination of modulus of rigidity by conducting tension test on a helical spring
8. Determination of modulus of rigidity by conducting compression test on a helical spring
9. Determination of modulus of rigidity by conducting torsion test
10. Determination of modulus of rigidity by conducting deflection test on fixed beam
11. Determination of modulus of rigidity by conducting deflection test on continues beam
12. Bend test on metal rod

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17

**DEPARTMENT OF MECHANICAL ENGINEERING**

**SYLLABUS FOR B.E. 2/4 I-SEMESTER**

**PRINCIPLES OF MECHANICAL ENGINEERING (For EEE)**

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Ref Code : ME 2070 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The course will enable the students to:<br>• learn the basic principles of mechanical engineering in the areas of Heat transfer, Refrigeration; IC engines; Gears, Ropes and Belt drives; Hydraulic turbines and pumps | At the end of the course students should be able to:<br>• compute the problems in heat transfer and refrigeration<br>• evaluate the performance of on I.C. Engines, air compressors and analyze the working of Boilers and gas turbines<br>• compute the power transmission, velocity ratio in belt &rope drives and gear trains.<br>• calculate coefficient of discharge in flow meters and evaluate the performance of hydraulic turbines<br>• analyze the problems in centrifugal pumps and reciprocating pumps |

**UNIT-I**

**Heat Transfer:** Modes of Heat transfer – conduction, convection and radiation – steady state conduction – Heat transfer through plane walls, cylinders, critical radius of insulation for cylinders, concept of black body radiation.

**Heat Exchanger:** Classification, Industry applications, LMTD calculations for parallel and counter flows.

**Refrigeration System:** Coefficient of performance, ton of refrigeration, air refrigeration system using Bell Colemn Cycle, simple vapour compression refrigeration system (dry saturated at the beginning of the compression) T-S and P-H diagrams, refrigerants and their properties, working principle of window and split air conditioning systems.

**UNIT-II**

**IC Engines:** Working of four–stroke and two–stroke petrol and diesel engines with P–v diagrams, calculation
of indicated power, brake power, specific fuel consumption, mechanical and thermal efficiencies.

**Reciprocating air compressors:** Uses of compressed air, principle of working and work done of single stage compressor–with and without clearance, multistage compressors, advantages, intercoolers and after cooler.



**Generation of Steam**: Classification of boilers, Fire tube boilers–Locomotive boilers, Cochran boiler, Water tube boiler–Babcock & Wilcox boiler.

**Gas Turbines**: Classification, calculation of efficiency of simple open gas turbine cycle (Joule cycle/Brayton cycle) and applications

**UNIT-III**

**Gears:** Classification, Gear trains, types – Single, compound, Inverted & Epi cyclic gear trains, Belt & rope drives, open and cross belt, length of belt, ratio of tension flat belts, condition for maximum power.

**UNIT-IV**

Introduction to Bernoulli's equation, applications – Venturi meter, Orifice meter, Flow through pipes – Hagen's formula, Friction loss in pipes, Darcy's formula, Reynolds number and its significance.

**Hydraulic Turbines:** Classification – working principle – Francis, Kaplan, Pelton Wheels, work done, power output, efficiency, specific speed, unit quantities, draft tube, performance characteristic curves.

**UNIT-V**

**Pumps:** Working principles and construction details of centrifugal and reciprocating pumps, Effect of friction, acceleration head, work done, power required with and without air vessels, cavitation, velocity triangles of centrifugal pumps.

**Learning Resources:**

1. PL Ballaney, Thermal Engineering, Khanna Publishers, New Delhi, 25th Ed., 2015.
2. VB Bandari, Machine Design, Tata McGraw Hill, 2nd Ed., 2013
3. R.K. Rajput, Thermal Engineering, Laxmi Publications, 8th Ed., 2010
4. Modi P.N. and Seth S.M., *Hydraulics and Fluid Mechanics including Hydraulics Machines*, Standard Book House, Delhi, 20th Ed., 2015.
5. Bansal R.K., *Fluid Mechanics and Hydraulic Machines*, Lakshmi Publications, 9th Ed., 2010.

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**
**DEPARTMENT OF MECHANICAL ENGINEERING**
**SCHEME OF INSTRUCTION AND EXAMINATION WITH EFFECT FROM THE ACADEMIC YEAR 2016-17**
**B.E. II YEAR II SEMESTER**

| S. No. | Syllabus Ref .No. | SUBJECT | Scheme of Instruction Periods per Week | | | | Scheme of Examination Duration in Hours | Maximum Marks SEM Exam | Maximum Marks Sessionals | Credits |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | D | P | | | | |
| **THEORY** | | | | | | | | | | |
| 1 | ME2040 | Kinematics of Machines | 4 | - | 1 | - | 3 | 70 | 30 | 3 |
| 2 | ME2050 | Applied Thermodynamics | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 3 | EC2280 | Applied Electronics | 3 | 1 | - | - | 3 | 70 | 30 | 3 |
| 4 | EE2090 | Electrical Circuits & Machines | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 5 | MA2030 | Mathematics-IV | 4 | - | - | - | 3 | 70 | 30 | 3 |
| 6 | HS2270 | Finishing School: Communication Skills in English-II | 4 | - | - | - | 3 | 70 | 30 | 2 |
| 7 | HS2140 | Human Values and Professional Ethics-I | 2 | - | - | - | 3 | 70 | 30 | 1 |
| **PRACTICALS** | | | | | | | | | | |
| 1 | ME2021 | Applied Thermodynamics Lab | - | - | - | 3 | 3 | 50 | 25 | 2 |
| 2 | EE2111 | Electrical Circuits & Machines Lab | - | - | - | 3 | 3 | 50 | 25 | 2 |
| 3 | EC2491 | Applied Electronics Lab | | | | 3 | 3 | 50 | 25 | 2 |
| | | **TOTAL** | **25** | **1** | **1** | **9** | **–** | **640** | **285** | **24** |
| **INTER DISCIPLINARY COURSES OFFERED BY MECH TO CIVIL, ECE and EEE** | | | | | | | | | | |
| 1 | ME2060 | Elements of Mechanical Engineering (For ECE) | 3 | 1 | - | - | 3 | 70 | 30 | 3 |
| 2 | ME2080 | Mechanical Technology (For CIVIL) | 2 | - | | - | 1.5 | 35 | 15 | 2 |
| 3 | ME2031 | Mechanical Technology Lab (For EEE) | - | - | | **3** | 3 | 50 | 25 | 2 |





**DEPARTMENT OF MECHANICAL ENGINEERING**
**SYLLABUS FOR B.E. 2/4 II-SEMESTER**
**KINEMATICS OF MACHINES**

| | | |
|---|---|---|
| Instruction : 4+1 Periods / week | Sem Exam Marks : 70 | Subject Ref Code : ME 2040 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The course will enable the students to:<br>• learn the graphical and analytical methods to perform kinematic analysis of planar mechanisms and to analyze the motion transmission between elements using lower and higher pairs. | At the end of the course students shall be able to:<br>• recognize the mobility of mechanisms<br>• perform kinematic analysis of planar mechanisms<br>• design the cam profile for given required motion of the follower.<br>• Analyze the motion transmission by using belt drive.<br>• Analyze the motion transmission by using gear drive. |

**UNIT– I**

**Definitions:** Kinematic link, pair, chain, mechanism and machine. Classification of links, pairs. Degrees of freedom of mechanisms, coupler curves and their properties.

**Inversions:** Quadric cycle chain, single and double slider crank chains.

**Straight line motion mechanisms:** Pantograph, Peaucellier, Hart.

**Steering gear mechanisms:** Davis and Ackerman.

**UNIT– II**

**Analysis of Mechanisms:** Velocity analysis: Graphical Relative velocity and Instantaneous center methods.

**Acceleration analysis:** Graphical method for different mechanisms including coriolis component of acceleration

**Kinematic analysis** of four bar and slider crank mechanisms using analytical method

**Synthesis:** Four bar mechanism using Freudenstein's method.

**UNIT– III**

**Cams:** Types of Cams and followers, Nomenclature of cam. Displacement diagrams for followers: uniform velocity, parabolic , simple Harmonic and cycloidal motions. Layout of cam profiles for translating motion - knife edge, flat and roller followers and for oscillating motion - roller follower. Introduction to special cams

**UNIT– IV**

**Belt drives: Flat, V-belt and rope:** Open and cross belt drives, Length of belt, Ratio of tensions, Effect of Centrifugal tension and initial tension over power transmission, Conditions for maximum power.

**Chain drives:** classification, length, velocity ratio, power transmission.

**UNIT– V**

**Gears:** Classification of gears.

**Spur Gears:** Nomenclature, Law of gear tooth action.

**Form of teeth:** cycloidal and involute profiles. Expressions for velocity of sliding between teeth, arc of contact and contact ratio. Interference of involute gears, minimum number of teeth to avoid interference. Introduction to helical, bevel and worm gears.

**Gear trains:** Simple, Compound, Reverted and epi-cyclic Gear Trains.

**Learning Resources:**


1. Thomas Bevan, Theory of Machines, CBS Publishers, 3rd Ed., 2005.
2. R.L.Norton, Kinematics and Dynamics of machinery, Tata McGraw Hill, 1st Ed., 2009
3. J.E.Shigley, Theory of Machines, Oxford University press, 4th Ed., 2015.
4. S.S. Ratan, Theory of Machines, Tata McGraw Hill, 3rd Ed., 2014.
5. Amitabha Ghosh and Ashok Kumar Mallik, Theory of Machines, East West Press, 3rd Ed., 2006


**Online Resources:**

1. www.journals.elsevier.com/mechanism-and-machine-theory
2. www.nptel.ac.in





**DEPARTMENT OF MECHANICAL ENGINEERING**

**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

**APPLIED THERMODYNAMICS**

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Ref Code: ME 2050 |
| Credits : 3 | Sessional Marks : 30 | Duration of Sem Exam : 3 Hrs |

| Course Objectives | Course Outcomes |
|---|---|
| The objectives of this course are to:<br>• describe the types and working principle of reciprocating air compressors<br>• explain the construction and working of internal combustion engines and discuss the combustion phenomenon in petrol and diesel engines<br>• classify and explain the working principles of steam boilers and condensors<br>• analyze vapour power cycles and steam nozzles. | On completion of the course the student will be able to:<br>• analyze the performance of air compressors and solve numericals related to the performance of single stage and multi stage air compressors<br>• describe the various cooling, lubrication, ignition & fuel supply systems and evaluate the performance parameters of internal combustion engines<br>• discuss various stages of combustion phenomena in i.c. engines<br>• explain the working principles of different boilers and condensers<br>• analyze the performance of vapour power cycles and steam nozzles |

**UNIT – I**

Reciprocating Air Compressors: Uses of compressed air, Classification of compressors-single stage and multistage compressors, Derivation of work done with and without clearance volume, Work done of multistage compressors-effect of clearance volume on work done, Inter-cooling and After-cooling

**UNIT-II**

Internal Combustion Engines : Classification, working principle, Deviation of actual cycles from air standard cycles, Index of compression and expansion for variable specific heats, Battery and Magneto ignition systems, Multipoint fuel injection system, Lubrication systems, Cooling systems, Carburetors-Simple and Zenith carburetors-Valve and Port-timing diagrams. Performance of I.C. engines-Determination of Indicated power, brake power, frictional power, brake thermal efficiency, mechanical efficiency, indicated thermal efficiency, relative efficiency, volumetric efficiency, specific fuel consumption based on brake power and indicated power, Heat balance sheet.

**UNIT-III**

Combustion in I.C. Engines: Combustion phenomena in spark ignition engines and compression ignition engines-Premixed and diffusion flames, Mechanics of propagation, Self-ignition process, Limits of self-ignition. Fuel requirements and fuel rating- Anti-knock additives like TEL etc., merits and demerits. Effect of engine variables- Stages of combustion - Delay period, Period of uncontrolled combustion, Period of controlled combustion, Afterburning. Types of combustion chambers in spark ignition and compression ignition Engines-Air pollution from I.C. engines- Effects and control of exhaust from engines.

**UNIT – IV**

Steam Boilers: Classification of Boilers: Fire tube boilers- Cochran boiler, Locomotive boiler, Water tube Boilers: Babcock and Wilcox boiler, super critical Boilers-Benson, Fluidized bed combustion boilers, Boiler mountings and accessories. Boiler performance and boiler draught-Chimney design, Types of condensers Jet and Surface condensers, introduction to cooling towers.

**UNIT-V**

Steam power plant: Working of Carnot and Rankine cycles, cycle analysis, Modified Rankine cycle, Cycle efficiency improvement methods, Reheating, Regeneration and Cogeneration.

Steam nozzles: Types of nozzles, Nozzle efficiency, Velocity of steam flowing through the nozzle. Mass of steam discharged from the nozzle, Condition for maximum discharge, Critical pressure ratio. Diameters of nozzle throat and exit for maximum discharge

**Learning Resources:**


1. Heywood. J.B, "Internal Combustion Engine Fundamentals", Tata McGraw Hill Education (India) Edition 2011, New Delhi, Re-print 2013.
2. Ganeshan.V, "Internal Combustion Engines", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 4th Ed., 2014.
3. Ballaney. P.L, "Thermal Engineering", Khanna Publishers, New Delhi, 25th Ed., 2015.
4. Rajput. R. K, "Thermal Engineering" Laxmi Publishers, New Delhi, 1st Ed., 2012.
5. Mahesh M Rathor, "Thermal Engineering" Tata McGraw Hill Education Pvt. Ltd., New Delhi 2010.






**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**
**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

## APPLIED ELECTRONICS

| | | |
|---|---|---|
| Instruction :4+1 Periods / week | Sem Exam Marks : 70 | Subject Ref Code : EC 2280 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course Objective | Course Outcomes |
|---|---|
| The objectives of this course are to:<br>• the course enables the students to acquire the knowledge of various electronic devices & their applications. | After the completion of course, students will able to:<br>• employ different electronic devices to build electronic circuits such as rectifiers, amplifiers, regulators & oscillators.<br>• implement digital circuits such as adder & subtractors using logic gates.<br>• convert real time signals into corresponding electrical signals using transducers.<br>• program 8051 Microcontroller for real-time interfacing applications. |

**UNIT - I**

***Semiconductor theory***: Energy levels, Intrinsic and extrinsic semiconductors, Mobility, diffusion and drift current, Hall effect.

Diodes - PN junction diodes,. V-I characteristics, dynamic & static resistance, principle of working and V-I characteristics of Zener diode, Working of simple Zener voltage regulator, V-I characteristics and applications of SCR and TRIAC. Working and characteristics of UJT.

**UNIT - II**

***Rectifiers & power supplies*** - block diagram description of a dc power supply, circuit diagram & working of half-wave & full wave rectifier, final equations of $V_{rms}$, $V_{dc}$, ripple factor and peak inverse voltage in each case. Principle of working of series inductor and shunt capacitor filters. Photoelectric devices-principle of operations of Photodiode, Phototransistor, Photovoltaic cell, Solar cell & LED.

**UNIT - III**

***Bipolar junction transistors:*** NPN & PNP transistors, structure, typical doping, working of NPN & PNP transistors. Concepts of common base, common emitter & common collector configurations. Comparison of three configurations with reference to voltage & current gains, input & output resistances and applications.

***Amplifiers & Oscillators:*** Circuit diagram & working of common emitter amplifier, function of each component in the circuit, need of proper biasing, frequency response, voltage gain and 3dB bandwidth. Concepts of feedback, working principles of oscillators, circuit diagram & working of RC, LC and Crystal oscillators.

**UNIT - IV**

***Integrated circuits***: Advantages of ICs, Analog and Digital ICs. Functional block diagram of operational amplifier, ideal operational amplifier, Inverting amplifier, Non inverting amplifier, Summing Amplifier, Differentiator, Integrator and Comparator.

Digital ICs: Boolean Algebra, Logic gates, realization of logic functions. Principle of combinational and sequential logic circuits, Flip-flops.

**UNIT - V**

***Transducers*** - Resistive and Capacitive transducers, Strain Guage, Thermistor, LVDT.

Micro controllers - Intel 8051 - Architecture, Memory organization, Register banks, Special function registers, Addressing modes. Instruction set of 8051 - Programming examples (addition, subtraction, 8 bit multiplication and 8 bit division, only), Interfacing of 8051 with DC and Stepper motor.

**Learning Resources:**


1. Jocob Millman, Christos C. Halkias and Satyabrata Jit, Electronics Devices and Circuits, Mc Graw Hill, 3/e., 2010.
2. S.Shalivahnan, N. Suresh Kumar, A Vallavea Raj, Electronics Devices and Circuits TMH, 2003.
3. Rama Kanth A. Gaykward, Op-AMPS and Linear Integrated Circuits -, EEE, 3/e., 1998.
4. Moris Mano, Digital Design, PHI, 3/e., 2009.
5. Mazidi M.A, Mazidi J.G & Rolin D. Mckinlay, "The 8051 Microcontroller & Embedded Systems using Assembly and C," 2/e, Pearson Education, 2007.






**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

**ELECTRICAL CIRCUITS AND MACHINES**

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Reference Code : EE 2090 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course Objective | Course Outcomes |
|---|---|
| • To impart fundamental concepts of DC and AC circuits, three phase circuits, transformers, DC machines, three phase induction motors and special motors to enable the students to understand and choose the motors in engineering applications. | • Apply the fundamental concepts to solve the problems in DC and AC circuits.<br>• Distinguish three phase connections, calculate power and analyze the behaviour of transformer.<br>• Demonstrate the principle of operation and performance characteristics of DC Machines.<br>• Select suitable three phase induction motor and also interpret speed control method for different applications.<br>• Identify suitable single phase induction motor , Stepper motor and BLDC motor for various applications. |

**UNIT-I**

**DC & AC Circuits:** Analysis of circuits using loop current method, Thevenin's and Norton's theorems, Sinusoidal sources, Phasor representation of sinusoidal quantities, Average and RMS values, Active power, Reactive power, Energy stored in inductance and capacitance, Mutual inductance, Dot convention, analysis of simple coupled circuits.

**UNIT-II**

**Production of 3-Phase Voltages:** Analysis of 3-phase balanced circuits, 3-phase power measurement by two wattmeter method. Transformers: Principle of transformation of voltages and currents, Equivalent circuits of transformer on no load and load, Efficiency and regulation of transformer, OC and SC tests, Auto-transformer.

**UNIT - III**

**DC Machines:** Construction and working principle of a DC machine, production of emf in a generator, Types of excitation, Characteristics of series, shunt and compound motors, Speed control and application of DC motors, Losses and efficiency.

**UNIT - IV**

**Induction Motors:** Production of rotating magnetic field, Construction and principle of operation of induction motors, Speed-torque characteristics, Methods of starting and Speed control of 3-phase induction motors.

**UNIT - V**

**Single-Phase & Special Motors:** Various types of single phase motors, Split phase, Capacitor start and capacitor run, Basic features of Stepper motor and Brushless DC motor.
Applications of variable frequency (speed) drives.

**Suggested Reading:**


1. V.K. Metha, Principles of Electrical Engineering, S.Chand & Co., 1995
2. Kothari and Nagrath, Basic Electrical Engineering, Tata McGraw Hill, 2nd Edition, 2002
3. Edward Hughes, Electrical Technology, 10th Edition, ELBS, 2010.
4. Vincent Del Toro, Electrical Engineering Fundamentals, 2nd Edition, PHI, 2003.
5. V.N. Mittle, Basic Electrical Engineering, TMH, 2000.






## DEPARTMENT OF MATHEMATICS
## SYLLABUS FOR B.E. 2/4 II-SEMESTER
## MATHEMATICS - IV

| | | |
|---|---|---|
| Instruction : 4 Periods / week | Sem Exam Marks : 70 | Subject Ref Code : MA 2030 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| COURSE OBJECTIVES | COURSE OUTCOMES |
|---|---|
| ***The course will enable the students to:*** | ***At the end of the course students will be able to:*** |
| 1. ***Understand*** the Definition of Laplace and inverse Laplace Transforms-Shifting Properties and various theorems and how to apply them in solving Differential Equations.<br>2. Analyze the characteristics and properties of and Z – transforms and solve the Difference Equations.<br>3. ***Study*** the concept of Fourier and inverse Fourier Transform of a function and various properties.<br>4. ***Understand*** the Analytic functions, to evaluate a line integral of a function of a complex variable using Cauchy's integral formula, to evaluate real integrals using complex integration and how to evaluate Laurent Series and residues. | 1. ***Evaluate*** Laplace transforms and inverse Laplace transforms of functions. Apply Laplace transforms to solve ordinary differential equations arising in engineering problems.<br>2. Apply Z-transform in the analysis of continuous time and discrete time systems and also solve the Difference Equations using Z-transform.<br>3. Determine Fourier transform, Fourier sine and cosine transform of a function.<br>4. Know the condition(s) for a complex variable function to be analytic and/or harmonic and state and prove the Cauchy Riemann Equation and use it to show that a function is analytic and to define singularities of a function, know the different types of singularities, evaluate contour integrals using the Cauchy Integral Theorem and the Cauchy Integral Formula and will be able to determine transformation in a complex space. |

**UNIT- I (12 classes)**

**Laplace Transforms**: Introduction to Laplace transforms - Inverse Laplace transform - Sufficient Condition for Existence of Laplace Transform – Properties of Laplace Transform- Laplace Transform of Derivatives - Laplace Transform of Integrals - Multiplication by $t^n$ - Division by t – Evaluation of Integrals by Laplace Transforms- Convolution Theorem - Application of Laplace transforms to Linear Differential Equations with Constant Coefficients.

**UNIT –II (8 classes)**

**Fourier Transforms:** Mathematical transforms, Fourier Integral Theorem - Fourier Transforms – Inverse Fourier Transform - Properties of Fourier Transform –Fourier Cosine & Sine Transforms - Convolution Theorem.

**UNIT-III: (8 classes)**

**Z-Transforms:** Introduction - Z-transforms of Standard sequences - Linearity Property – Damping Rule - Shifting Properties- Multiplication by n - Initial and Final value theorems – Inverse Z-Transforms- Convolution Theorem – Application of Z-Transforms to Difference Equations.

**UNIT-IV (15 classes)**

**Functions of Complex Variables**: Limits and Continuity of function - **D**ifferentiability and Analyticity - Necessary & Sufficient Condition for a Function to be Analytic - Milne-Thomson's method - Cauchy-Riemann Equations in Polar Form - Harmonic Functions - Complex Integration - Cauchy's Theorem - Extension of Cauchy's Theorem for multiply connected regions- Cauchy's Integral Formula.

**UNIT-V (10 classes)**

**Power series** - Taylor's Series - Laurent's Series (without proofs) - Zeros and Singularities –Residues – Cauchy's Residue Theorem -Evaluation of Real Integrals using Residue Theorem -Bilinear Transformation.

**Suggested Reading**:


1. Advanced Engineering Mathematics - R.K.Jain & S.R.K.Iyengar 3rd Edition, Narosa Publications
2. 2. Higher Engineering Mathematics, Dr.B.S Grewal 40th Edition, Khanna Publishers.
3. Laplace's and Fourier transforms Goyal & Gupta, Pragati Prakashan
4. Kreyszig E, Advanced Engineering Mathematics, 8 th Edition, John Wiley & Sons Ltd, 2006.
5. A text book of Engineering Mathematics by N.P.Bali & Manish Goyal, Laxmi Publication.
6. Higher Engineering Mathematics, H.K. Dass, Er. Rajnish Verma 2011 Edition S.Chand & company Ltd.
7. R.V. Churchill, "Complex Variables & its Applications".Mc Graw-Hill Book Company, INC






## DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
### SYLLABUS FOR BE 2/4 - II SEMESTER
### FINISHING SCHOOL: COMMUNICATION SKILLS IN ENGLISH-II

| | | |
|---|---|---|
| Instruction : 4 Periods per week | Sem Exam Marks : 70 | Subject Ref Code : HS2270 |
| Credits : 2 | Sessional Marks : 30 | Duration of Sem Exam : 3 Hours |

| Course Objective | Course Outcome |
|---|---|
| **1.** identify the various features and functions of human language and communication.<br>**2.** develop the habit of listening effectively so as to analyze the speaker's tone and tenor.<br>**3.** choose appropriate words so as to speak and write accurately.<br>**4.** read various types of texts and sift information correctly.<br>**5.** study organizational structures and behavioral patterns and adapt appropriately. | • Participate in group and forum discussions by providing factual information, possible solutions, and examples.<br>• Debate on a topic by picking up the key points from the arguments placed.<br>• Provide logical conclusions to the topics under discussion.<br>• Prepare, present, and analyze reports.<br>• choose appropriate words and tone to present accurate, specific, and factual reports.<br>• Compose a summary of beginning high level reading text that identifies the thesis and key supporting details.<br>• Summarize with 70% comprehension..<br>• Apply reading skills, including how to approach different types of literature. |

**UNIT I: PROFESSIONAL DISCUSSIONS AND DEBATES**

**Competencies:**

- Analytical and Probing Skills
- Interpersonal Skills

**Topics Covered:**

Discussing
Debating

**Topic Level Details**

**Discussing**

**Competencies:**

- Thinking
- Assimilating

**Debating**

**Competencies:**

- Comprehending key points of the debate and note decisive points including supporting details.
- Construct a logical chain of arguments and decisive points.
- Writing a review about a product by providing reasons, causes, and effects

**UNIT II: DRAWING CONCLUSIONS**

**Competencies:**

- Reasoning skills - Coherent and logical thinking
- Reporting and Analyzing skills.

**Topics Covered:**

How to draw conclusions

Importance of Logic

**Topic Level Details:**

**Drawing conclusions**

**Competencies:**

- Analyzing the points discussed.
- Connecting all points without gaps.
- Identifying clinchers.
- Communicating the decisions

**UNIT III - REPORTING**

**Competencies:**

- Reporting an incident
- Writing/Presenting a project report

**UNIT IV - READING FOR CONTEXT**

**Competencies**

Develop metacognitive strategies

**Topics covered**

**Develop critical reading skills:**

- o Recognition of author's purpose
- o Awareness of stylistic differences
- o Discernment of fact and opinion
- o Evaluation of fact and opinion
- o Recognition of propaganda techniques
- o Present vocabulary building methods
- o Use comprehension and vocabulary strategies to raise reading rate.

**UNIT V- SOFT-SKILLS**

1. Professional integrity
2. Managing time
3. Coping with stress
4. Organizational skills





**DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES**

**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

**HUMAN VALUES AND PROFESSIONAL ETHICS-I**

| | | |
|---|---|---|
| Instruction : 2 Periods per week | Sem Exam Marks : 70 | Subject Ref Code : HS2140 |
| Credits : 1 | Sessional Marks : 30 | Duration of Sem Exam : 3 Hours |

| Course objectives | Course outcomes |
|---|---|
| **The course will enable the students to:** | **At the end of the course students should be able to:** |
| • Get a holistic perspective of value-based education.<br>• Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations.<br>• Understand professionalism in harmony with self and society.<br>• Develop ethical human conduct and professional competence.<br>• Enrich their interactions with the world around, both professional and personal. | • Gain a world view of the self, the society and the profession.<br>• Make informed decisions.<br>• Start exploring themselves in relation to others and their work –constantly evolving into better human beings and professionals<br>• Inculcate Human values into their profession.<br>• Validate their aspirations through right understanding of human relationship and see the co-relation between the human values and prevailing problems.<br>• Strike a balance between physical, mental, emotional and spiritual parts their being.<br>• Obtain a holistic vision about value-based education and professional ethics. |

**UNIT-I:**

**The purpose of life**-Individual to society to the ideal –individual transformation as a stepping stone to idealism- the flow of transformation from individual to society – An awakened society as a basis to move towards the concept of idealism. How do lifestyles and habits affect the basic behavior? What is the roadmap to a healthy lifestyle and how does it impact the individual, furthermore, how does it enhance the purpose of life.

**Philosophy of Life from different cultures–value of life–Objective of life-** The Physical, Mental and Emotional aspects of man-Building an integrated personality. Ways and means to accomplish it.

**UNIT-II:**

**Time Management**-Why is it essential? Impediments-how best to manage time? Benefits of effective time-management. How to make the best of the present?

**UNIT-III:**

**Positive thinking-**The need, nature and scope of positive Thinking-Positive thinking as a foundation to success and building character – Introspection and Self-analysis-identifying the desirable traits-Building of right character. Meaning of values versus skills. Self-worth and Professional worth. Professional Obligations and Competence. Work-life balance.

**UNIT-IV:**

**Different lifestyles and habits**- **Excellence-Professional & Personal ethics in Society**-Goals-Striking a balance between excellence and goals and how to aim for excellence and achieve it with ethics.

**UNIT-V:**

**Potentials and harnessing Potentials**-Self-Hidden Potentials-Weeding out Weaknesses-Channelizing the potential. Optimizing potential to achieve goals.

**Learning Resources:**


1. B.L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.
2. A.N Tripathy, 2003 Human values, New Age International Publishers.
3. EG Seebauer & Robert L. Berry,2000, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press.
4. Mike Martin and Ronald Schinzinger "Ethics in Engineering "McGraw Hill
5. Charles E Haris, Micheal J Rabins, " Engineering Ethics "Cengage Learning






**DEPARTMENT OF MECHANICAL ENGINEERING**
**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

## APPLIED THERMODYNAMICS LAB

| | | |
|---|---|---|
| Instruction : 3 Periods / week | Sem Exam Marks : 50 | Subject Ref Code : ME 2021 |
| Credits : 2 | Sessional Marks: 25 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The objectives of this course are to:<br>• perform experiments on various types of I.C engines and two stage air compressor.<br>• conduct experiments on Viscometer and flash and fire point apparatus | On completion of the course the student will be able to:<br>• determine volumetric efficiency and isothermal efficiency of a two stage air compressor.<br>• draw port timing diagram on two stroke engine valve timing diagram on four stroke engine<br>• evaluate the performance of internal combustion engine<br>• prepare heat balance sheet on internal combustion engine<br>• determine absolute and kinematic viscosity of an given lubricating oil using Viscometer |

**List of Experiments:**

1. To determine volumetric efficiency, isothermal efficiency and mass flow rate of a two stage reciprocating air compressor.
2. To determine valve/ port timing diagram of a Petrol/Diesel engine.
3. To conduct performance test on single cylinder Diesel engine.
4. To conduct heat balance test on a Diesel engine.
5. To conduct performance test on multi cylinder Petrol engine.
6. To conduct performance test on a two-stroke Petrol engine.
7. To conduct performance test on twin cylinder Diesel engine.
8. To study the performance of a Petrol engine under different compression ratios.
9. To conduct Morse test on multi cylinder Petrol engine.
10. Exhaust gas analysis of Petrol engine for carbon-monoxide and unburnt hydrocarbons.
11. Exhaust gas analysis of Diesel engine for carbon deposits using smoke meter.
12. Determination of viscosity of lubricating oil.
13. Determination of flash and fire points of a fuel

Note: Minimum 12 experiments to be conducted

## DEPARTMENT OF MECHANICAL ENGINEERING
## SYLLABUS FOR B.E. 2/4 II-SEMESTER
## ELECTRICAL CIRCUITS AND MACHINES LAB

| | | |
|---|---|---|
| Instruction : 3 Periods / week | Sem Exam Marks : 50 | Subject Ref Code : EE 2111 |
| Credits : 2 | Sessional Marks: 25 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The objective of this course is:<br>• to impart the practical knowledge on basic theorems, measuring of 3-phase power, performance and speed control of DC machines and AC machines. | On completion of the course the student will be able to:<br>• identify suitable instruments in the application of dc and ac machines.<br>• analyze the performance and speed control of dc machines.<br>• analyze the performance and speed control of induction motor.<br>• analyze the performance of single phase transformer.<br>• compute a 3-phase power by using 2-Watt meters. |

**LIST OF EXPERIMENTS:**

1. Verification of Thevenin's and Norton's Theorems
2. Measurement of 3-Phase Power by Two Wattmeter Method
3. Study of Single-Phase R, L & C Series & Parallel Circuits
4. Study of Self and Mutual Inductance of Coils and their Interconnections
5. Magnetization Curve of a Separately Excited DC Generator
6. Load Characteristics of a DC Shunt Generator
7. Performance Characteristics of a DC Shunt Motor
8. Performance Characteristics of a DC Compound Motor
9. Performance Characteristics of a DC Series Motor
10. Speed Control of DC Shunt Motor.
11. O.C. and S.C. Tests on Single - Phase Transformer.
12. Performance Characteristics of 3-Phase Induction Motor.
13. Speed Control Methods of Induction Motors.





## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
## SYLLABUS FOR B.E. 2/4 II-SEMESTER
## APPLIED ELECTRONICS LAB

| | | |
|---|---|---|
| Instruction : 3 Periods / week | Sem Exam Marks : 50 | Subject Ref Code : EC 2491 |
| Credits : 2 | Sessional Marks : 25 | Duration of Sem Exam : 3 Hours |

| Course Objective | Course Outcomes |
|---|---|
| The objective of this course is:<br>• to enable the students to verify the characteristics of various electronic devices & circuits. | On completion of the course the student will be able to:<br>• Identify different electronic components & devices.<br>• Verify Input/output characteristics of active devices and to compute their parameters.<br>• Perform operations such as addition, subtraction, comparison of voltage levels using operational amplifiers<br>• Implement digital adders & sub-tractors using logic gates.<br>• Program 8051 microcontroller for simple 8-bit arithmetic operations & to interface 8051 with external peripherals. |

**List of Experiments:**

1. Characteristics of Semiconductor and Zener diodes
2. CRO Applications
3. Full-wave rectifier with and without filter
4. Zener Voltage Regulator
5. Characteristics of BJT transistor (CB, CE, CC)
6. Feedback amplifier and amplifier without feedback
7. Phase shift oscillator
8. Hartley oscillator & Colpitts Oscillator.
9. Operational Amplifier and it's applications
10. Logic gates and flip flops-verifications
11. Realization of Half and Full adder
12. Characteristics of SCR
13. Arithmetic operations (8 bit) using 8051 Microcontroller
14. Interfacing applications using 8051 Microcontroller

***General Note***:

1. There should not be more than 2 students per batch while performing any of the lab experiment.
2. Mini Project cum design exercise:
   a) The students must design, rig-up, and test the circuits wherever possible and should carry out the experiments individually.
   b) This exercise carries sessional marks of 10 out of 25, while the remaining 15 marks are for the remaining lab exercises.

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17

**DEPARTMENT OF MECHANICAL ENGINEERING**

**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

**ELEMENTS OF MECHANICAL ENGINEERING (for ECE)**

| | | |
|---|---|---|
| Instruction : 3+1 Periods / week | Sem Exam Marks : 70 | Subject Ref Code : ME 2060 |
| Credits : 3 | Sessional Marks: 30 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The course will enable the students to:<br>• learn the basic principles of Mechanical Engineering in the areas of Thermodynamics, Heat transfer, Refrigeration, IC Engines, Compressors, Manufacturing and Kinematics of Machines | At the end of the course students should be able to:<br>• understand the thermodynamic laws and their applications.<br>• understand the modes of heat transfer and different types heat exchangers.<br>• understand the principles of refrigeration.<br>• understand the basic manufacturing processes.<br>• understand the principles of kinematic links |

**UNIT– I**

**Thermodynamics:** Concept of system, process and properties, laws of thermodynamics, concept of entropy and Clausius inequality, steady flow energy equation for an open system.

**IC Engines:** Working of Four Stroke and Two Stroke Petrol and Diesel Engine with p– V diagrams, Valve timing diagram, Calculation of Indicated power, Brake power, Specific Fuel Consumption, Mechanical and Thermal efficiencies.

**Reciprocating Air Compressors:** Work done, efficiency of multistage compressors, Effect of clearance volume.

**UNIT– II**

**Heat Transfer:** Basic modes of heat transfer, Fourier's law of conduction, Newton's Law of cooling, Stefan– Boltzmann Law of radiation and one dimensional steady state conduction heat transfer through plane walls without heat generation.

**Heat Exchangers:** classification and applications of heat exchangers in industry, derivation of LMTD in parallel and counter– flow heat exchangers and problems.



**UNIT– III**

**Refrigeration:** Types of Refrigeration systems–Air Refrigeration system, vapor compression system, ammonia– water absorption refrigeration system, thermoelectric refrigeration system, COP and representation of cycle on T-S and H-S diagrams, Types and properties of refrigerants, eco– friendly refrigerants, Introduction to Psychometry and Psychometry processes.

**UNIT– IV**

**Basic Manufacturing Processes:** Welding, Brazing, Soldering, brief description of process and parameters, associated principles of gas welding, arc welding.

**Casting:** Sand casting, Die casting and principles and applications.

**Forming:** Basic concepts of forming processes: Extrusion, rod/wire drawing, Forging and Rolling.

**Principles and Applications of basic Machine Processes:** Turning, Drilling and Shaping.

**Introduction to Additive Manufacturing**.

**UNIT– V**

Definition of kinematic link and pair, mechanism and machine.

**Gears:** Classification of gears, nomenclature,

**Gear Trains:** Simple, compound, inverted and epi– cycle gear trains.

**Belt and Rope drives:** Open and crossed belt drives, Length of belt, Ratio of tensions of flat belt, condition
for maximum power transmission for flat belt.

**Learning Resources:**

1. RK Rajput, Thermal Engineering, Laxmi Publications, 2005
2. C. Sachdeva, Fundamentals of Engineering heat and mass transfer, Wiley Eastern Ltd., 2004.
3. PN Rao, Manufacturing Technology, Vol. 1 & 2, Tata McGraw hill Publishing Co., 2010.
4. Thomas Bevan, Theory of Machines, CBS Publishers, 1995.
5. V K Manglik , Elements of Mechanical Engineering, PHI Learning Pvt Ltd, 2013
6. Chua CK, Leong K.F, Rapid Prototyping Principles – Principles and applications in Manufacturing, Cambridge University Press India Private Limited, 3rd Edition, 2000

**DEPARTMENT OF MECHANICAL ENGINEERING**

**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

**MECHANICAL TECHNOLOGY (for Civil Engineering)**

| | | |
|---|---|---|
| Instruction : 2 Periods / week | Sem Exam Marks : 35 | Subject Ref Code: ME 2080 |
| Credits : 2 | Sessional Marks: 15 | Duration of Sem Exam : 1½ Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The objectives of this course are to:<br>• learn the basic principles of excavating equipment, conveying equipment hoisting equipment, concrete producing equipment and pneumatic equipment | On completion of the course the student will be able to:<br>• demonstrate the applications of earth moving equipment .<br>• determine the working principles and applications of conveying equipment & hoisting equipment.<br>• determine the mechanism involved in concrete producing equipment and pneumatic equipment. |

**UNIT– I**

**Excavating Equipment:** General description, operation, maintenance and selection of the following: Earth moving and Excavating Equipment: Shovels, Dragline, Clamshell, Cable excavator, Bucket wheel excavator, Tractor, Bulldozer, Scraper, Trenchers, Grader, Earth Compactors.

**UNIT– II**

**Conveying Equipment:** Belt conveyor, Screw Conveyor, Bucket Conveyor, Apron Conveyor, Aerial Ropeway.

**Hoisting Equipment:** Hoist winch. Differential and Worm geared chain hoists. Fork lift trucks, Guyed and stiffly derricks, swing and non– swing mobile crane, whirler crane, Construction elevator, passenger lift and Bucket elevators.

**UNIT– III**

**Aggregate and Concrete Producing Equipment:** Crushers – Jaw, Gyratory, Hammer and Roll Crushers, Screens – Stationary, Shaking and Vibrating screens. Concrete mixers and Concrete pumps.

**Pneumatic Equipment:** Reciprocating air– compressor, construction pneumatic tools; jack hammer, paving breaker, Rock drill, concrete vibrator.

**Learning Resources:**

1. R.L. Peurifoy, Construction Planning Equipment and Methods, McGraw Hill Publishers, 7th Ed., 1956
2. Mahesh Varma, Construction Equipment and its planning and application, Metropolitan books Co, Delhi, 2004
3. Goodes Spence, Building and Civil Engineering Plant, Crosby Lock Wood, 1995





**DEPARTMENT OF MECHANICAL ENGINEERING**

**SYLLABUS FOR B.E. 2/4 II-SEMESTER**

**MECHANICAL TECHNOLOGY LAB (For EEE)**

| | | |
|---|---|---|
| Instruction : 3 Periods / week | Sem Exam Marks : 50 | Subject Ref Code : ME 2031 |
| Credits : 2 | Sessional Marks: 25 | Duration of Sem Exam : 3 Hours |

| Course Objectives | Course Outcomes |
|---|---|
| The objectives of this course are to:<br>• conduct experiments by applying principles of heat transfer and Refrigeration<br>• conduct experiments on I. C. Engines and two stage air compressor<br>• conduct experiments on flow meters, hydraulic pumps and turbines | On completion of the course the student will be able to:<br>• evaluate the performance of internal combustion engine<br>• analyze the performance of multi stage air compressor<br>• determine the flash and fire point of a given fuel using flash and fire point apparatus.<br>• calculate the hydraulic efficiency, discharge and power output of hydraulic turbines and pumps<br>• plot the theoretical discharge Vs actual discharge using venture meter and orifice meter.<br>• |

**List of Experiments:**

1. Performance test on multi cylinder/single cylinder diesel engine.
2. Measurement of discharge by venture meter.
3. Measurement of discharge by Orifice meter.
4. Determination of heat flow through lagged pipe
5. Determination of Heat transfer coefficient under Natural Convection
6. Determination of volumetric efficiency and Isothermal Efficiency of Two stage reciprocating air compressor
7. Performance characteristics of Francis Turbine
8. Performance characteristics of Pelton wheel
9. Performance characteristics of reciprocating pump
10. Performance characteristics of centrifugal pump
11. Determination of effectiveness of parallel flow and counter flow heat exchanger
12. Determination of COP refrigeration test rig

**SCHEME OF INSTRUCTION & EXAMINATION**
**2/4 B.E. Bridge Course (for Lateral Entry Students of all branches)**
**Scheme of Instruction and Examination w.e.f 2015-16**

**I-Semester**

| S No. | Code | Subject | Scheme of Instruction | | | | Scheme of Examination | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Periods per week | | | | Duration | Maximum Marks | | Credits |
| | | | L | T | D | P | | SEM Exam | Sessionals | |
| **Theory** | | | | | | | | | | |
| 1 | MA2040 | Mathematics | 1 | - | - | - | 90 min | 25 | - | - |
| 2 | PH2130 | Physics of materials | 1 | - | - | - | 90 min | 25 | - | - |
| 3 | CE2080 | Engineering Mechanics | 2 | - | - | - | 3 hrs | 50 | - | - |
| **Practicals** | | | | | | | | | | |
| 4 | CS 2091 | C-Programming Lab | - | - | - | 2 | 3 hrs | 50 | - | - |
| | | | **4** | **-** | **-** | **2** | **-** | **150** | - | - |
| **II-Semester Practical** | | | | | | | | | | |
| 1 | HS2231 | ELT-LAB | - | - | - | 2 | 3 | 50 | - | - |

No credits will be awarded to the bridge courses offered at 2/4 B.E (all branches) lateral entry students admitted from the academic year 2015-16 under autonomous status. However pass in each of these courses is mandatory to obtain the degree. Every student shall get 40% marks in each course for a pass in theory subject and 50% marks in laboratory course. Only semester examinations will be conducted at the end of each semester. The marks/Grades obtained by the student in this course ***will not be added in computing the SGPA/CGPA***





## DEPARTMENT OF CIVIL ENGINEERING

### SYLLABUS FOR BRIDGE COURSE BE 2/4 - FIRST SEMESTER (All branches)
### ENGINEERING MECHANICS

| | |
|---|---|
| Instruction :2 periods week | Subject Reference Code: **CE2080** |
| Semester Exam Marks : **50** | Duration of Semester Exam: **3 Hrs** |

| COURSE OBJECTIVES | COURSE OUTCOMES |
|---|---|
| 1. To **learn** the resolution of a system of spatial forces.<br>2. To **assess** the frictional forces on rigid body.<br>3. To **understand** the concepts of dynamics and its principles.<br>4. To **explain** kinetics and kinematics of particles, projectiles, curvilinear motion and centroidal motion.<br>5. To **impart** the concepts of work-energy method and its applications to rectilinear translation, centroidal motion. | ***students will be able to:***<br>1. **Judge** whether the body under the action of spatial force system.<br>2. **Solve** problem of bodies subjected to friction.<br>3. **Distinguish** between statics and dynamics and differentiate between kinematics and kinetics.<br>4. **Understand** the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatary motion and rigid body motion.<br>5. **Know** the concepts of work and energy principles subject and derive the work energy equations for translation, rotation and connected systems. |

**UNIT-I (3 periods)**

**Force Systems:** Components of forces, moments in space and its applications.

**UNIT-II (4 periods) :**

**Friction:** Laws of friction. Application to simple systems and wedge friction.

**UNIT-III (5 periods) :**

**Kinematics:** Rectilinear motion, Curvilinear motion, Velocity and acceleration of a particle.

**UNIT-IV (6 periods) :**

**Kinetics:** Analysis as a particle. Analysis as a rigid body in translation. Fixed axis rotation and Rolling bodies.

**UNIT-V (5 periods) :**

**Work Energy:** Principles of work-energy, and its application to translation, Particle motion and connected systems.

**Learning Resource:**


1. F.L.Singer, "Engineering Mechanics", Harpper & Collins, Singapore 1994.
2. S.P.Timoshenko and D.H.Young, "Engineering Mechanics", McGraw Hill International Edition, 1983
3. Andrew Pytel., Jaan Kiusalaas., "Engineering Mechanics", Cengage Learning, 2014.
4. F.P.Beer & E.R.Johnston, "Jr. Vector Mechanics for Engineers", TMH, 2004.
5. R.C.Hibbeler & Ashok Gupta, "Engineering Mechanics", Pearson Education, 2010.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2008.
8. Meriam. J. L., "Engineering Mechanics", Vol-I Statics, John Wiley & Sons, 2008.
9. NPTEL Course and Virtual labs on the web.


*w.e.f. the academic year 2015-16*

**DEPARTMENT OF MATHEMATICS**

**SYLLABUS FOR BRIDGE COURSE BE 2/4 - FIRST SEMESTER (for All branches)**

**MATHEMATICS**

| | |
|---|---|
| Instruction :1 period week | Subject Reference Code: **MA2040** |
| Semester Exam Marks : **25** | Duration of Semester Exam: **90 Min** |

**Unit -I (6 Periods):**

**Basics of Statistics & Probability:** Measure of central tendency (Mean, Median & Mode) - Definition of Probability - Addition & Multiplication theorem - Discrete random variable

**Unit – II (6 Periods):**

**Integral Calculus:** Methods of integration- Multiple Integrals - Applications of Integration - areas - Surface areas - Volume of solid of revolution

**LEARNING RESOURCES**:


1. B.S. Grewal , Higher Engineering Mathematics.
2. Fundamentals of Mathematical Statistics by Gupta & Kapoor
3. Integral calculus by Shantinarayan




*w.e.f. the academic year 2015-16*

**DEPARTMENT OF PHYSICS**

**SYLLABUS FOR BRIDGE COURSE BE 2/4 - FIRST SEMESTER (All branches)**

**PHYSICS OF MATERIALS**

| | |
|---|---|
| Instruction :1 period week | Subject Reference Code: **PH2130** |
| Semester Exam Marks : **25** | Duration of Semester Exam: **90 Min** |

| Course objectives | Course Outcomes<br>*Student should be able* |
|---|---|
| • To apply basic principles of physics in field of engineering<br>• Analyze the characteristics of semiconductor devices<br>• To take up research at Undergraduate Level in new and emerging areas like materials science including magnetic dielectrics and nanotechnology | • Differentiate properties, characteristics and applications of various materials like magnetic, dielectric and semiconducting materials<br>• Inquire the new trends in interdisciplinary research area such as Magnetic materials, dielectric materials Semiconductors and nanotechnology |

**UNIT -I**

**1. Dielectric Materials: (3 periods)**

Polar and Non polar dielectrics-Different types of polarizations in dielectrics- Ferro-electric materials: properties and applications.

**2. Magnetic Materials: (3 periods)**

Ferro, Ferri and anti ferro magnetic materials and their properties, Domain theory of ferromagnetism- Hysteresis ( B-H ) curve-soft and hard magnetic materials

**UNIT – II:**

**1. Semiconductor Devices: (3 periods)**

Fermi energy in semiconductor- Intrinsic carrier concentration of semiconductor-Characteristics of Photo diode and solar cell

**2. Nano Materials: (3 periods)**

Distinction between Bulk, thin and nano material-Surface to volume ratio-Quantum confinement-Basic properties of nano-materials, Applications of Nano materials and CNT's.

**LEARNING RESOURCES**:


1. Introduction to Solid State Physics, Kittel C, Wiley Eastern
2. A text book of Engineering Physics, Avadhanulu & Kshirasagar
3. Applied Physics for Engineers, Neeraj Mehta, PHI
4. N Chattopadhyay, K. K.Banerjee- Introduction to Nanoscience and Nanotechnology, PHI

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**
**SYLLABUS FOR BRIDGE COURSE BE 2/4 - FIRST SEMESTER (for All branches)**
**C-PROGRAMMING LAB**

| Instruction :2periods/week | Subject Reference Code: **CS 2091** |
|---|---|
| Sem Exam Marks: **50** | Duration of Sem Exam:**3hr** |

| Course objective | Course outcomes |
|---|---|
| Students should be able to | Students will be able to |
| • understand the fundamentals of programming in C Language<br>• write, compile and debug programs in C<br>• formulate problems and implement in C<br>• effectively choose programming components to solve computing problems | • draw flowcharts and write algorithms for a given problem<br>• choose appropriate data types for writing programs in C language<br>• design programs involving input output operations, decision making and looping constructs<br>• design modular programs |

1. Finding roots of quadratic equation
2. Check whether a given number is (i) Prime (ii) Perfect (iii) Am Strong
3. Sin x and Cos x values using series expansion.
4. Menu driven program to calculate income tax
5. Generating Pascal's Triangle
6. Frequency of occurrence of characters and special characters like \n, \t, white spaces.
7. Bubble sort, Selection sort using arrays
8. Linear search and Binary Search.
9. Functions to find maximum and minimum of given set of numbers, interchange two numbers
10. Recursion: Factorial, Fibonacci, GCD of given numbers
11. Functions for string manipulations without using library functions
12. String comparisons and sorting using pointers to strings.
13. Matrix addition and multiplication using pointers
14. Programs on Structures and Unions
15. File handling programs, Finding the no: of characters, words and lines of given text file.
16. **Mini Project**: Simple application using the concepts of C language

**Learning Resources:**

1. B.A.Forouzan & Richard F.Gilberg, *A Structured Programming Approach using C*, 3rd Edition, Cengage Learning, 2013
2. Brian W. Kernighan and Dennis M. Ritchie, *The C Programming Language* 2nd Edition, Prentice-Hall, 2006
3. E.Balagurusamy, *Programming in ANSI C*, TMG, 4th Edition, 2008.





**DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES (for All branches)**
**SYLLABUS FOR BRIDGE COURSE BE 2/4 – SECOND SEMESTER**
**ELT-LAB**

| Instruction :2 periods week | Subject Reference Code: **HS2231** |
|---|---|
| Semester Exam Marks : **50** | Duration of Semester Exam: 2hrs |

| Course objectives | Course Outcomes |
|---|---|
| • Use language effectively without mother tongue influence.<br>• Converse in various situations.<br>• Make paper and power point presentations.<br>• Listen to audio clippings, exchange dialogues and write short texts.<br>• Speak effectively using discourse markers.<br>• Read and understand various forms of texts and review them. | • Pronounce words in isolation as well as in spoken discourse.<br>• Research and sift information to make presentations.<br>• Comprehend the tone and tenor of various types of speeches from media and classroom lectures.<br>• Listen for gist and make inferences from various speeches.<br>• Identify connectives and transitions in various speeches.<br>• Use connectives and make transitions effectively while speaking |

**PHONETICS LAB- TOPICS**

1 **Introduction to English Phonetics:** Introduction to auditory, acoustic and articulatory phonetics. Organs of speech: the respiratory, articulatory and phonatory systems

2 **Sound System of English:** Phonetic sounds, Introduction to International Phonetic Alphabet, Classification and Description of English Phonemic sounds; Minimal pairs: The Syllable: Types of syllables; Difficulties of Indian speakers with sound of English.

3 **Rhythm and Intonation:** Introduction to rhythm and intonation; Major patterns of intonation in English with their semantic implications; difficulties of Indian speakers with sound of English.

**INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS**

1 **Group discussion:** Objectives of GD, Types of GDs; Initiating, Continuing, and concluding a GD.

2 **Debate:** Understanding the differences between a debate and a group discussion, essentials of debate, concluding a debate.

3 **Presentation Skills:** Making Effective Presentations, Expressions which can be used in Presentations, Use of Non-Verbal Communication, Coping with Stage Fright, Handling Question and Answer Session; Use of Audio-Visual Aids, PowerPoint Presentations.

4 **Public Speaking:** Advantages of public speaking, essentials of an effective speech, types of delivery, rehearsal techniques, planning and delivering a speech.

## DEPARTMENT OF MECHANICAL ENGINEERING

***ALMANAC FOR B.E - II & III year - I Semester [all branches]***

| S.No. | Particulars | Date |
|---|---|---|
| 1 | Commencement of Instruction | 11-07-2016 |
| 2 | I Class Test | 29-08-2016 to 01-09-2016 |
| 3 | II Class Test | 26-10-2016 to 29-10-2016 |
| 4 | Last date of Instruction | 29-10-2016 |
| 5 | Preparation holidays & Practical Examinations | 31-10-2016 to 12-11-2016 |
| 6 | Commencement of Theory Examinations | 14-11-2016 |

***ALMANAC FOR B.E - II & III year - II Semester [all branches]***

| S.No. | Particulars | Date |
|---|---|---|
| 1 | Commencement of Instruction | 26-12-2016 |
| 2 | I Class Test | 13-02-2017 to 16-02-2017 |
| 3 | II Class Test | 11-04-2017 to 15-04-2017 |
| 4 | Last date of instruction | 15-04-2017 |
| 5 | Preparation holidays & practical Examinations | 17-04-2017 to 29-04-2017 |
| 6 | Commencement of Theory Examinations | 01-05-2017 |
| 7 | Summer vacation | 01-05-2017 to 08-07-2017 |
| 8 | Commencement of I Semester for the Academic year 2017-2018 | 10-07-2017 |

| E - JOURNALS & E-BOOKS SUBSCRIBED | |
|---|---|
| ASCE | 35 |
| ASME | 27 |
| IEEE ASPP | 155 |
| ACM Digital Library | 1138 |
| Springer Mechanical | 49 |
| Total GIST E-Journals | 1405 |
| DELNET CONSORTIUM (IESTC E-Journals -2016) | 1152 |
| DELNET E-Journals | 817 |
| Total e-journals | 3374 |
| DELNET MEMBERSHIP E-Books | 335 |
| Journals and magazines Print version | 106 |