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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
CH 1001	Engineering Chemistry	100	30	20	30	20	4	1	2

Course Contents

Unit I
WATER AND ITS INDUSTRIAL APPLICATIONS : Sources, Impurities, Hardness & its units, Industrial water characteristics, softening of water by various methods, Exernal & Internal treatment, Boiler troubles, causes, effects & remedies,   Characteristics of municipal water & its treatment, Numerical problems based on softening methods.

Unit II
FUELS & COMBUSTION: Fossil fuels & classification, Calorific value, Determination of calorific value by Bomb Calorimeter, Proximate and Ultimate analysis of coal and their significance, calorific value Computation based on ultimate analysis data, Carbonization, Manufacturing of coke & recovery of by products. Knocking, relationship between' knocking & structure of hydrocarbons, improvement of anti knocking characteristics of IC engine fuels, Diesel engine fuels, Cetane number, combustion and it related numerical problems.

Unit III
A. LUBRICANTS: Introduction, Mechanisms of lubrication, Classification of lubricants,   Properties and Testing of lubricating oils,   Numerical problems based on testing methods.

B. CEMENT & REFRACTORIES: Manufacture , IS specifications, Setting and hardening of cement, Plaster of Paris. Refractory : Introduction, classification and properties of refractories .

Unit IV
HIGH-POLYMER : Introduction, types and classification of polymerization, Reaction Mechanism, Natural & Synthetic Rubber; Vulcanization of Rubber, Preparation,Properties & uses of the following- Polythene, PVC, PMA, PMMA, Teflon, Poly acrylonitrile, PVA, Nylon, Nylon 6:6, Terylene, Phenol formaldehyde, Urea -Formaldehyde Resin, Glyptal, Silicone Resin, Polyurethanes; Butyl Rubber, Neoprene, Buna N, Buna S. Flow sheet manufacturing diagram of Nylon 6:6 & Decoran.

Unit V
A. INSTRUMENTAL TECHNIQUES IN CHEMICAL ANALYSIS : Introduction, Principle, Instrumentation and applications of IR, NMR,UV, Visible, spectroscopy, Gas Chromatography, Lambert's and Beer's Law

B. WATER ANALYSIS TECHNIQUES :

Alkalinity, hardness (Complexo-metric), Chloride, Free chlorine, DO, BOD and COD, Numerical problems based on above technique

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CH 1001Engineering Chemistry

Books:

1. Sawyer, McCarty and Parkin , Chemistry for Environmental Engineering,   Mc Graw Hill,International.
2. B.K. Sharma , Engineering Chemistry , Krishna Publications, Meerut.
3. S. S. Dara & A.K. Singh , A Text Book of Engineering Chemistry , S. Chand Publication, New Delhi.
4. O.P. Viramani, A.K. Narula , Applied Chemistry - Theory and Practice, , New Age Publictions,New Delhi
5. Ghosh , Polymer Science, Tata McGraw Hill. New Delhi
6. Jain & jain , Engineering Chemistry –, Dhanpat Rai Publications,New Delhi.
7. Shashi Chawla , Engineering Chemistry –, Dhanpat Rai Publications, New Delhi.

Engineering Chemistry Practical
NOTE: At least 10 of the following core experiments must be performed during the session.

1. **Water Testing**
(i) Determination of Total hardness by Complexometric titration method.
(ii) Determination of mixed alkalinity
(a) OH^- & $CO3^{--}$
(b) $CO3^{--}$ & $HCO3^-$
 (iii) Chloride ion estimation by Argentometric method.

2. **Fuels & lubricant testing:**
(i) Flash & fire points determination by
a) Pensky Martin Apparatus,
b) Abel's Apparatus,
c) Cleveland's open cup Apparatus.
d) Calorific value by bomb calorimeter
(ii) Viscosity and Viscosity index determination by
a) Redwood viscometer No.1
b) Redwood viscometer No.2
(iii) Proximate analysis of coal
a) Moisture content
b) Ash content
c) Volatile matter content
c) Carbon residue
(iv) Steam emulsification No & Anline point determination
(v) Cloud and Pour point determination of lubricating oil

3. **Alloy Analysis**
(i) Determination of percentage of Fe in an iron alloy by redox titration using N-Phenyl
anthranilic acid as internal indicator.
(ii) Determination of Cu and or Cr in alloys by Iodometric Titration.

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
MA 1002	Engineering Mathematics I	100	30	20	-	-	4	1	-

Course Contents

Unit-I
Expansion of functions by Maclaurin's and Taylor's theorem for one variable; Taylor's theorem for function of two variables, Partial differentiation and its application in approximation and errors;; Maxima and minima of two variables; Curvature, Radius of curvature and centre of curvature, Asymptotes, Curve tracing .

Unit-II
Definite Integral as limit of a sum and its Application in summation of series, Double and triple integrals, Change of order of integration, Area and Volume using double and triple integral, Beta and Gamma functions , Length of the curves.

Unit-III
Ordinary differential equations of first order linear and higher degree, Linear higher order differential equations with constant coefficients, Homogeneous linear differential equations, Simultaneous linear differential equations.

Unit-IV
Rank of matrix, Solution of simultaneous linear equations by elementary transformation, Consistency of equation, Eigen values and Eigen Vectors, Cayley-Hamilton theorem and its application to find inverse, Vector space, Vector subspace, Linear dependence and independence .

Unit-V
Algebra of logic, Boolean algebra, Principle of duality, Basic theorems, Boolean expressions and function; Elementary concept of Fuzzy logic : Definition, Union, Intersection and applications, Graph theory: Graphs, Sub graphs, Path, Walk, Tree, Matrix representation of undirected graphs.

Books:
1. Ramana: Advance Engg. Mathematics, TMH New Delhi.
2. B.S. Grewal: Higher Engineering Mathematics , Khanna Publication.
3. D.G.Guffy: Advance Engineering Mathematics, C R C Press
4. S.Arumungam: Mathematics for Engineers, SCITECH Publuication.
5. Erwin Kreyszig: Advanced Engineering Mathematics, Wiley India.

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
HN1003	Communication Skills	100	30	20	30	20	4	1	2

Course Contents

Unit I
Introduction to communication- Communication, meaning and significance, defining communication objectives, communication situation, process of communication, 7 c's of communication, oral and written communication, barriers to communication and ways to overcome them, Importance of communication for technical students, Achieving success through effective business communication.

Unit II
Linguistic techniques - Grammar usage and mechanics, Parts of speech, sentence structure, paragraph development, precise writing, précis writing, punctuation, style, register, word usage, vocabulary, Reading comprehension, Phonetic symbols and pronunciation, dialogue, conversation, telephone conversation, debate, designing and delivery of oral presentation.

Unit III
Technical communication: writing skills Writing definitions of engineering objects, processes and principles, technical descriptions of engineering objects and processes, technical report writing, objectives, characteristics of a report, structure of a formal report, types of technical reports, short and long report. Report of trouble, project report, laboratory report, progress report.

Unit IV
Business correspondence- Business letters, parts and layouts of formal letter, writing resume and application letter, calling and sending quotations, orders and complaints. Tenders, memos, electronic mail.

Unit V
Listening and non-verbal communication- Listening, types of listening, process of listening, active listening, improving listening skills, barriers to listening, non-verbal communication, concept of time and space, cross cultural communication, communicating information through visuals.

Books:
1. Krizan and Merrier, Effective business communication, Cengage learning.
2. Shirley Taylor, Communication for business – a practical approach , Pearson Education.
3. Francis Soundararaj, Speaking and writing for effective business communication, Macmillan.
4. M Arshaf Rizvi , Effective technical communication ,Tata Mcgraw Hill.
5. R. C. Sharma and Krihna Mohan, Business correspondence and report writing ,Tata Mcgraw Hill .
6. Meenakshi Raman and Sangeeta Sharma, Technical communication: principles and practice, Oxford.
7. Scot Ober, Biztantra Contemporary business communication.

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
EX1004	Basic Electrical Engg.	100	30	20	30	20	4	1	2

<div align="center">Course Contents</div>

Unit I
D.C. Circuits- Units and dimensions, Ohm's Law, Kirchhoff's Law, Superposition theorem, Thevenin's theorm and their application for analysis of series and parallel resistive circuits excited by independent voltage sources, Power & Energy in such circuits. Mesh & nodal analysis, Star Delta circuits.

Unit II
1- phase AC Circuits- Generation of sinusoidal AC voltage, definition of average value, R.M.S. value, form factor and peak factor of AC quantity , Concept of phasor, Concept of Power factor, Concept of impedance and admittance, Active, reactive and apparent power, analysis of R-L, R-C, R-L-C series & parallel circuit

Unit III
3-phase AC Circuits- Necessity and advantages of three phase systems, Meaning of Phase sequence, balanced and unbalanced supply and loads. Relationship between line and phase values for balanced star and delta connections. Power in balanced & unbalanced three-phase system and their measurements

Unit IV
Magnetic Circuits- Basic definitions, analogy between electric and magnetic circuits, magnetization characteristics of Ferro magnetic materials, self inductance and mutual inductance, energy in linear magnetic systems, coils connected in series, AC excitation in magnetic circuits, magnetic field produced by current carrying conductor, Force on a current carrying conductor. Induced voltage, laws of electromagnetic Induction, direction of induced E.M.F.
single phase transformer- its general construction, working principle, e.m.f. equation, open circuit and short circuit test .

Unit V
Electrical Machines- . D.C. Motor & D.C. Generator, Three phase Induction motor and Synchronous Machines, their general construction, working principle, emf equation and applications. Types of losses occurring in electrical machines.

Books:-

1. Vincent Del Toro, Principles of Electrical Engineering , Prentice Hall, 1987.
2. A.E. Fitzgerald, Higginbotham and Grabel, Basic Electrical Engineering, McGraw Hill.
3. H. Cotton, Electrical Technology, Wheelers
4. Parkar Smith, Problems in Electrical Engineerin CBS
5. HUGHES Electrical Technology , Pearson
6. P.S. Bimbhra Electrical Machinary Khanna Publisher.
7. D.P. Kothari & I.J. Nagrath, Basic Electrical Engineering, Tata McGraw Hill, 1991.
8. C.L. Wadhwa Basic Electrical Engineering. New Age International

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EX1004 Basic Electrical Engg.

List of experiments-

1. Verification of Krichhoff's voltage & current law
2. Verification of Thevenin's theorem
3. Verification of superposition theorem
4. Observe various A.C. waveforms and prove relationship between maximum and RMS value for a sine wave.
5. Prove voltage relationship for R-L-C series circuit .
6. Measure inductance and resistance of a choke coil.
7. Measure power & power factor of an AC circuit
8. Verify relation ship between line and phase quantities for star & delta connected circuit
9. Measure Power in a three phase circuit
10. Plot magnetization characteristic for a coil
11. Study of construction of various electrical machines
12. Operation of various electrical machines.

Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
ME1005	Engineering Graphics	100	30	20	30	20	3	1	2

Course Contents

Unit I
Introduction To Engineering Drawing: Principles of Engineering Graphics and their Significance – Drawing Instruments and their Use – Conventions in Drawing – Lettering – BIS Conventions. Various types of lines, principal of dimensioning, types of dimensioning . Concept of Engineer's Scale, Graphical Scales, Differences and their Construction.
Curves used in Engineering Practice & their Constructions –Conical curves: Ellipse, parabola, Hyperbola By different methods , Construction of Roulettes – Cycloid, Trochoid Inferior and superior , Epicycloid, Epitrochoid Inferior and superior, Hypocycloid Hypotrochoid Inferior and superior, Special conditions, Involutes of different polygons, Drawing of tangents and normal to the above curves.

Unit II
Computer Aided Drafting (CAD): Introduction of Design and Drafting**,** Benefit, software's, Wire frame, Surface and Solid Model, Basic commands of drafting entities like line, circle, polygon, polyhedron, cylinders. Modification and editing commands like offset, Fillet, Chamfer, trim Extend, mirror, array etc. Solution of projection problems on CAD.
Principle of projection: Introduction, types of projections, plane of projection, first angle and third angle projection system, Projection of points.

Unit III
Projection of Lines, Projection of parallel Line, perpendicular line and oblique Line, line placed in two quadrants, line contained by Profile Plane, Traces of lines, methods of determining T.L. and T.I. of oblique line, rotating line method, Trapezoidal method, Real world problems.
Projection of planes: Projection of Perpendicular and oblique plane. Traces of plane.

Unit IV
Projection of Solids: Classification of Solids, Position of solids with respect to R.P., projection of platonic solids, polyhedrons, Solids of revolution**,** projection of solids on Auxiliary plane**,** Projection of Combination of Solids.
Section of Solids: Classification of section planes, B.I.S. representation, Section of right solids by normal and inclined planes, Section of platonic solids, True and apparent shape of section, Problems on anti section.

Unit V
Development of Surfaces: Principle of development of surfaces, methods of development Parallel line and radial line method for right solids, solids with cutouts, Intersection of cylinders.
Isometric Projections: Principle of Isometric projection, Isometric scale, Isometric axes, isometric views, methods of drawing isometric projections, Combinations of Solids, Isometric Projection from orthographic drawing.
Conversion of Isometric views to Orthographic Views

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ME1005 Engineering Graphics

Books

1. Bhatt. N.D, Engineering Drawing
2. Venugopal,Engineering Drawing and graphics ,New Age
3. Jeyopoovan. T,Engineering Drawing , Vikas Publication.
4. John K.C, Engineering Graphics for Degree , PHI
5. Agrawal & Agrawal ,Engineering Graphics, TMH.
6. Dhawan RK ,Engineering Drawing,S Chand & Co.
7. A Premier on Computer Aided Engg drawing-Visvesvaraya Technological University (VTU), Belgaum.

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem	Mid Sem tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
ME1006	Work Shop Practice	-	-	-	30	20	-	-	3

<div align="center">

Course Contents

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Unit I :
Introduction : Manufacturing Process and its classification ,Casting ,Machining ,Plastic deformation and metal forming ,Joining Processes ,Heat treatment process ,Assembly process. Powder Metallurgy, Introduction to computers in manufacturing.
Black Smithy Shop/Lab.: Use of various smithy tools .Forging operations: Upsetting, Drawing down, Fullering, Swaging, Cutting down, Forge welding, Punching and drafting.
Suggested Jobs/Laboratory work: Forging of chisel, Forging of Screw Driver

Unit II:
Carpentry Shop/Lab.: Timber: Type, Qualities of timber disease, Timber Grains, Structure of timber, Timber Seasoning, Timber preservation .Wood working tools: Wood working machinery, joints & joinery .Various operations of planning using various carpentry planes sawing & marking of various carpentry joints.
Suggested Jobs/Laboratory work: Any of the Carpentry joints like mortise of tennon joint.

Unit III:
Fitting Shop/Lab.: Study and use of Measuring instruments, Engineer steel rule, Surface gauges caliper, Height gauges, feeler gauges, micro meter. Different types of files, File cuts, File grades, Use of surface plate, Surface gauges drilling tapping Fitting operations: Chipping filling, Drilling and tapping.
Suggested Jobs/Laboratory work: Preparation of job piece by making use of filling, sawing and chipping, drilling and tapping operations.

Unit IV
 Foundry/Lab.: Pattern Making: Study of Pattern materials, pattern allowances and types of patterns .Core box and core print. Use and care of tools used for making wooden patterns.
Moulding/Lab.: Properties of good mould & Core sand, Composition of Green, Dry and Loam sand. Methods used to prepare simple green and bench and pit mould dry sand bench mould using single piece and split patterns.

Unit V:
Welding : Study and use of tools used for Brazing ,Soldering ,Gas & Arc welding .Preparing Lap & Butt joints using gas and arc welding methods ,Study of TIG & MIG welding processes .Safety precautions.

Books:
1. Bawa,Workshop Practice TMH.
2. Rao P.N.,Manufacturing Technology –Vol 1&2, TMH.
3. Hazara Choudhary, Workshop Practice –, Vol I & II
4. Chapman, Workshop Technology Vol 1-5

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem	Mid Sem. tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
PH1051	Engineering Physics	100	30	20	30	20	4	1	2

Course Contents

Unit I
Quantum Physics-Group and particle velocities & their relationship. Uncertainty principle with elementary proof and applications (determination of position of a particle by a microscope, non existence of electron in nucleus, diffraction of an electron beam by a single slit). Compton scattering. Wave function and its properties, energy and momentum operators, time dependent and time independent Schrödinger wave equation. Application of time independent Schrödinger wave equation to particle trapped in a one dimensional square potential well (derivation of energy eigen values and wave function)

Unit II
Wave Optics Interference: Fresnel's biprism, Interference in thin films (due to reflected and transmitted lght), interference from a wedge shaped thin film, Newton's rings and Michelson's
interferometer experiments and their applications. Diffraction at single slit, double slit and n-slits (diffraction grating). Resolving power of grating and prism. Concept of polarized light, Brewster's laws, Double refraction, Nicol prism, quarter & half wave plate.

Unit III
Nuclear Physics- Nuclear liquid drop model (semi empirical mass formula), nuclear shell model, Linear Particle acceleratos: Cyclotron, general description of Synchrotron, Synchrocyclotron, and Betatron. Geiger- Muller Counter, Motion of charged particles in crossed electric and magnetic fields. Uses of Bainbridge and Auston mass Spectrographs.

Unit IV
Solid State Physics- Qualitative discussion of Kronig Penny model (no derivation), Effective mass, Fermi-Dirac statistical distribution function, Fermi level for Intrinsic and Extrinsic Semiconductors, Zener diode, tunnel diode, photodiode, solar-cells, Hall effect. Superconductivity: Meissner effect, Type I and Type II superconductors,

UNIT V
Laser and Fiber Optics- Laser: Stimulated and spontaneous processes, Einstein's A & B Coefficients, transition probabilities, active medium, population inversion, pumping, Optical resonators, characteristics of laser beam. Coherence, directionality and divergence. Principles and working of Ruby, Nd:YAG, He-Ne ,Carbon dioxide Lasers & p-n junction diode laser with energy level diagrams. Fundamental idea about optical fiber, types of fibers, acceptance angle & cone, numerical aperture, V-number, propagation of light through step index fiber (Ray theory) pulse dispersion, attenuation, losses & various uses.
Applications of lasers and optical fibers.

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PH1051 Engineering Physics

Books: -
1. Ghatak, Optics , TMH
2. V. S. Yadava, Engineering Physics TMH
3. Optics by Brijlal and Subhraininyan.
4. .N. Avadhanulu and P.G. Kshirsagar, Engineering physics M S. Chand & Co.
5. Brijlal and Subraminiyan. Atomic and Nuclear physics
6. Beiser, Concepts of Modern Physics TMH
7. Kittel Solid State Physics   ,Wiley India
8. Halliday, Fundamentals of Physics Wiley India

List of experiments: -

1. Biprism, Newton's Rings, Michelsons Interferometer.
2. Resolving Powers –Telescope, Microscope, and Grating.
3. G.M. Counter
4. Spectrometers-R.I., Wavelength, using prism and grating
5. Optical polarization based experiments: Brewster's angle, polarimeter etc.
6. Measurements by LASER-Directionality, Numerical aperture, Distance etc.
7. Uses of Potentiometers and Bridges (Electrical)..
8. Experiments connected with diodes and transistor.
9. Measurement of energy band gap of semiconductor.
10. To study Hall effect.
11. Solar cell.
12. To find the width of s single slit by f He-Ne Laser.
13. To determine the numeral aperture (NA) of a Optical Fibre.
14. To determine plank's constant.
15. Other conceptual experiments related to theory syllabus.

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Subject Code	Subject	Maximum Marks Allotted					Credits		
		Theory			Practical		05		
		End Sem	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
MA 1052	Engineering Mathematics II	100	30	20	-	-	4	1	-

Course Contents

Unit-I

Fourier series: Euler's formula, Fourier series for discontinuous functions, Expansion of odd and even periodic functions, Half range series, Complex form of Fourier Series Parseval's formula, Fourier Transform: Definition of Fourier transform, Fourier Sine and Cosine transform, Fourier Integral theorem, Properties of Fourier transform.

Unit-II

Laplace Transform: Introduction of Laplace transform, Laplace transform of elementary functions, Properties of Laplace transform, Change of scale property, First and second shifting properties, Laplace transform of derivative and integral. Inverse Laplace transform & its properties, Convolution theorem, Applications of Laplace transforms to solve the ordinary differential equations. Z-transform and its properties.

Unit-III

Second Order linear differential equation with variable coefficients: Solution by Methods One integral is known, Removal of first derivative, Changing independent variable and variation of parameter.Series solution method, Solutions of Legendre and Bessel's equation.

Unit-IV

Partial Differential Equations: Formulation of partial differential equations ,Linear and non-linear partial differential equations of first order , Linear homogeneous and non homogeneous partial differential equations of second and higher order with constant coefficients. Separation of variable method, Heat equation, Wave equation and Laplace's equations.
.
Unit-V

Vector Calculus: Differentiation of vectors, scalar and vector point function, Gradient, Geometrical meaning of gradient, Directional derivative, Divergence and curl .Line Integral, Surface Integral and Volume Integral, Stoke's theorem (Green's theorem as a special case) and Gauss divergence theorem.

Books:
1. B.S. Grewal: Higher Engineering Mathematics , Khanna Publication.
2. S S Sastri: Engineering Mathematics, PHI
3. S.Arumungam: Mathematics for Engineers, SCITECH Publuication.
4. Ramana: Advance Engg. Mathematics, TMH New Delhi
5. Babu Ram :Engineering Mathematics, Pearson
6. Erwin Kreyszig: Advanced Engineering Mathematics, Wiley India.

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
ME1053	Basic Mechanical Engineering.	100	30	20	30	20	4	1	2

Course Contents

Unit I :
Materials : Classification of engineering material ,Composition of Cast iron and Carbon steels, alloy steels their applications . Mechanical properties like strength , hardness, toughness , ductility, brittleness , malleability etc. of materials , *Tensile test- Stress-strain diagram of ductile and brittle materials ,Hooks law and modulus of elasticity . Hardness and Imp*act testing of materials

Unit II:
Measurement: Temperature, pressure, velocity, flow, strain & torque measurement ,concept of measurement error & uncertainty analysis , Micrometer ,Dial gauge, Slip gauge ,Sine-bar and Combination set.
Production Engineering : Introduction to Lathe and Drilling machines and their various operations.

Unit III :
Fluids : Fluid properties pressure, density and viscosity . Types of fluids , Newton's law of viscosity , Pascals law, Pressure variation with depth , Bernoull's equation for incompressible fluids , Introduction to Laminar and Turbulent flow , working principle of Hydraulic machines, pumps, turbines, Reciprocating pumps , Torque Converter .

Unit IV:
Thermodynamics : Thermodynamic system , properties , state , process , Zeroth, First and second law of thermodynamics, thermodynamic processes at constant pressure ,volume, enthalpy & entropy .
Steam Engineering : Classification and working of boilers , mountings and accessories of boilers ,natural and artificial draught **,** steam properties, use of steam tables, working principle of steam Engine.

Unit V:
 IC Engine : Working of Two stroke & Four stroke Petrol & Diesel   Engine, Otto and Diesel cycles ,P-V & T-S diagrams .
Refrigeration: Methods of Refrigeration **,** Reverse Carnot cycle , Working principle of simple vapor Compression Refrigeration System , coefficient of perform (COP), Unit of Refrigeration.

Books:

1. Kothandaraman & Rudramoorthy, Fluid Mechanics & Machinery, New Age .
2. Nakra & Chaudhary , Instrumentation and Measurements, TMH.
3. Nag P.K, Engineering Thermodynamics , TMH .
4. Ganesan , Internal Combustion Engines, TMH .
5. Agrawal C M, Basic Mechanical Engineering ,Wiley Publication.
6. Achuthan M , , Engineering Thermodynamics ,PHI.

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ME1053 Basic Mechanical Engineering.

List of Experiments:

Theory related Eight to Ten experiments including core experiments as follows :

1. Tensile testing of standard Mild Steel specimen.
2. Verification of   Bernoulli's Theorem .
3. Linear and Angular measurement using ,Micrometer , Slip Gauges, Dial Gauge and Sine-bar.
4. Study of different types of Boilers and Mountings .
5. To find COP of a Refrigeration unit .
6. Study of different IC Engines .
7. Study of Lathe & Drilling Machines.

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. tests (Two tests average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
CE 1054	Basic Civil Engg.& Engineering Mechanics	100	30	20	30	20	4	1	2

Course Contents

Unit I
Engineering Materials - Stones, Bricks, Cement, Lime, Timber, Mortar and Concrete- types, basic properties, tests & uses.

Unit II
Building construction- Sub and super structure of a building, Types of Foundations, Types of Brick and Stone masonry, Planning & Orientation of building, Plastering and Pointing, Concept of Green Building.

Unit III
Surveying & Positioning- Introduction to Surveying- Classification, Fundamental Principles, & Instrument Used, Linear measurement by Chain survey, Angular measurement by Compass survey, Measurement of elevation by levelling, Introduction to Remote Sensing & its applications.

Engineering Mechanics

Unit IV
Forces, Centroid & Moment of Inertia- Composition and resolution of forces, Concurrent, non-concurrent and parallel forces in a plane, Free body diagrams, Moment of a force and Varigon's theorem, Conditions of equilibrium, Polygon of forces , Couple, Moment of a couple, Equivalent couple, Addition of couples, Location of Centroid and Moment of Inertia of plane areas, Perpendicular Axis and Parallel Axis theorems,

Unit V
Shear Force and Bending Moment: Shear Force and Bending Moment Diagram for Cantilever and Simply supported beam with concentrated load, distributed load and couple. Point of Inflexion/ Contra-flexure, Relationship between bending moment and shear for pure bending.
Books:

1. Palanichamy, Basic Civil Engineering , TMH
2. S. Ramamrutam & R. Narayanan: Basic Civil Engineering, Dhanpat Rai Pub, New Delhi.
3. Duggal: Surveying, Tata McGraw Hill New Delhi.
4. S. C. Rangwala: Building Construction, Charotar Publications House, Anand.
5. Sushil Kumar: Building Construction.
6. Shesha Prakash & Mogaveer: Elements of Civil Engineering and Engineering Mechanics, PHI Learning Pvt. ltd New Delhi
7. R.K. Rajput : Engineering Mechanics, S. Chand & Co.
8. Dr. K.L. Kumar Engineering Mechanics, Tata Mc Graw Hills New Delhi.
9. Timoshenko TMH: Engineering Mechanics.
10. R S Khurmi : Engineering Mechanics.
11. Jivan Kachnane & Ruchi Shrivastava : Engineering Mechanics, Ane Books.
12. Duggal : Building Materials, New Age International Publishers.

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CE 1054 Basic Civil Engg. & Engineering Mechanics

List of Experiments: Students are expected to perform minimum ten experiments from the list suggested below by preferably selecting experiments from each unit of syllabus.

Basic Civil Engineering

1. To perform Chain survey of a given area for locating existing ground features.
2. To perform Traverse surveying with prismatic compass, check for local attraction and determine corrected bearings
3. To perform Levelling exercise by Height of instrument method and Rise & Fall method.
4. To study the use of Theodolite for determining horizontal and vertical angles
5. To determine the Compressive strength of Bricks.
6. To determine the Compressive strength of Concrete.
7. To determine (a) Normal consistency (b) Initial and Final Setting time of a cement sample.

Engineering Mechanics

1. To verify the law of Triangle of Forces and Lami's theorem.
2. To verify the law of parallelogram of forces.
3. To verify law of polygon of forces
4. To find the forces in members of a simple jib crane and to compare them with   theoretical values
5. To determine the moment of inertia of fly wheel by falling weight method.
6. To verify the law of moments using a bell crank lever.
7. To determine support reaction and shear force at a given section of a simply   Supported beam and verify in analytically using parallel beam apparatus
8.   To find out the centroid of plane areas graphically and verify it analytically.

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| Subject Code | Subject | Maximum Marks Allotted | | | | | Credits | | |
| | | Theory | | | Practical | | | | |
		End Sem.	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab assignment	L	T	P
CS 1055	Basic Computer Engineering	100	30	20	30	20	4	1	2

Course Contents

UNIT I
Computer: Definition, Classification, Organization i.e. CPU, register, Bus architecture, Instruction set, Memory & Storage Systems, I/O Devices, System & Application Software. Computing Ethics, Computer Application in e-Business, Bio-Informatics, health Care, Remote Sensing & GIS, Meteorology and Climatology, Computer Gaming, Multimedia and Animation etc.

UNIT II
Operating System: Definition, Function, Types, Management of File, Process & Memory.Programming Languages: Generations, Characteristics & Categorization. Introduction to Programming : Procedure Oriented Programming VS object oriented programming, , OOPS Features and Merits.

UNIT III
C++ : Features, Character, Tokens, Precedence and Associativity, Program Structure, Data Types, Variables, Operators, Expressions, Statements and control structures, I/O operations, Array, Functions, Structures & Unions, Object & Classes, Constructors & Destructors, Overloading Functions & Operators, Derived Classes and Inheritance.

UNIT IV
Data base Management System : Introduction, File oriented approach and Database approach, Data Models, Architecture of Database System, Data independence, Data dictionary, DBA, Primary Key, Data definition language and Data Manipulation Language

UNIT V
Computer Networking : Introduction, Goals, ISO-OSI Model, Functions of Different Layers. Internetworking Concepts, Devices, TCP/IP Model. Introduction to Internet, World Wide Web, Network Security & E-commerce,
Books:

1. E Balagurusamy, Fundamentals of Computers TMH.
2. V Rajaraman, Fundamentals of Computers PHI
3. Anita Goel, Computer Fundamentals Pearson.
4. Balagurusamy, Peter Norton, Introduction to Computers TMH
5. Object Oriented Programming with C++ :E. TMH
6. Rajesh K.Shukla, Object Oriented Programming in C++ Wiley India
7. Ajoy Kumar Ray & Tinku   Acharya Information Technology Principles and Application PHI.
8. Kenneth Hoganson, Concepts in Computing Jones & Bartlett.
9. Silberschatz and Galvin Operating Systems   Wiley India
10. Andrew Tananbaum, Computer Networks PHI

w.e.f. academic session 2010-11

CS 1055 Basic Computer Engineering

List of Experiment

1. Study and practice of Internal & External DOS commands.
2. Study and Practice of MS windows – Folder related operations, My-Computer, window explorer, Control Panel,
3. Study and practice of Basic linux Commands – ls, cp, mv, rm, chmod, kill, ps etc.
4. Creation and editing of Text files using MS- word.
5. Creation and operating of spreadsheet using MS-Excel.
6. Creation and editing power-point slides using MS- power point
7. Creation and manipulation of database table using SQL in MS-Access.
8. WAP to illustrate Arithmetic expressions.
9. WAP to illustrate Arrays.
10. WAP to illustrate functions.
11. WAP to illustrate constructor & Destructor.
12. WAP to illustrate Object and classes.
13. WAP to illustrate Operator overloading.
14. WAP to illustrate Function overloading.
15. WAP to illustrate Derived classes & Inheritance.

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Subject Code	Subject	Maximum Marks					Credits		
		Theory			Practical				
		End Sem.	Mid Sem. Tests (Two tests Average)	Quiz, assignment	End Sem	Lab Assignment	L	T	P
HN1056	Language lab & Seminars	-	-	-	30	20	-	-	2

Course Contents

<u>Course objective</u>: This course intends to impart practical training in the use of English Language for Communicative purposes and aims to develop students' personality through Language Lab.

Topics to be covered in the Language laboratory sessions:

1. Introducing oneself, family, social roles, personal image design, building relationships, body language, concept of time and space.
2. Public Speaking and oral skills with emphasis on conversational practice, Role plays, extempore speech, JAM (Just a minute sessions), describing objects and situations, giving directions, debate, telephonic etiquette.
3. Reading Comprehension: Intensive reading skills, rapid reading, and reading aloud (Reading material to be selected by the teacher).
4. Translation from English to Hindi and vice versa.
5. Oral Presentation: preparation and delivery (Topic to be selected by the teacher.)

w.e.f. academic session 2010-11