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New Syllabus For

FIRST YEAR ENGINEERING

Structure and Syllabus

Syllabus to be implemented from June 2013 onwards.



SHIVAJI UNIVERSITY, KOLHAPUR

FIRST YEAR ENGINEERING

Structure and Syllabus

(From the Academic Year 2013-2014)

(Course common to all branches except Architecture and Textile Engineering)

INSTRUCTIONS:

There are two groups in each semester:

1. Physics Group and
2. Chemistry Group

Allotment of groups to students:

a) **Semester I:** 50% students from each college will be admitted to Physics Group and remaining 50% will be admitted to Chemistry Group. The concerned College will decide the number and names of the students to be admitted in physics and chemistry groups and inform the same to the University.

b) **Semester II:** The students for Physics group in semester-I will be admitted to Chemistry Group in semester-II. The students for Chemistry Group in semester-I will be admitted to Physics Group in semester-II.

First Year Engineering Course Common to All Branches

Semester I: Physics Group

Sr. No.	Subject	Teaching / Week (Hours/Week)				Examination Scheme (Marks)		
		L	P	T	Total	Theory	Term Work	Total
1.	Engineering Physics	03	02	-	05	100	25	125
2.	Engineering Mathematics-I	03	-	01	04	100	25	125
3.	Basic Electrical Engineering	03	02	-	05	100	25	125
4.	Basic Civil Engineering	03	02	-	05	100	25	125
5.	Engineering Graphics#	03	02	-	05	100#	25	125
6.	Professional Communication-I	01	02	-	03	-	25	25
7.	Workshop Practice-I	01	02	-	03	-	50	50
	Total	17	12	01	30	500	200	700

#Theory paper of 4 hours duration

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First Year Engineering Course Common to All Branches Semester I: Chemistry Group

Sr. No.	Subject	Teaching / Week (Hours/Week)				Examination Scheme (Marks)		
		L	P	T	Total	Theory	Term Work	Total
1.	Engineering Chemistry	03	02	-	05	100	25	125
2.	Engineering Mathematics-I	03	-	01	04	100	25	125
3.	Fundamentals of Electronics and Computer \$	03	02	-	05	100	25	125
4.	Applied Mechanics	03	02	-	05	100	25	125
5.	Basic Mechanical Engineering	03	02	-	05	100	25	125
6.	Professional Communication-I	01	02	-	03	-	25	25
7.	Workshop Practice-II	01	02	-	03	-	50	50
	Total	17	12	01	30	500	200	700

\$ should be taught by single faculty ONLY

**First Year Engineering Course Common to All Branches
Semester II: Physics Group**

Sr. No.	Subject	Teaching / Week (Hours/Week)				Examination Scheme (Marks)		
		L	P	T	Total	Theory	Term Work	Total
1.	Engineering Physics	03	02	-	05	100	25	125
2.	Engineering Mathematics-II	03	-	01	04	100	25	125
3.	Basic Electrical Engineering	03	02	-	05	100	25	125
4.	Basic Civil Engineering	03	02	-	05	100	25	125
5.	Engineering Graphics#	03	02	-	05	100#	25	125
6.	Professional Communication-II	01	02	-	03	-	25	25
7.	Workshop Practice-I	01	02	-	03	-	50	50
	Total	17	12	01	30	500	200	700

#Theory paper of 4 hours duration

**First Year Engineering Course Common to All Branches
Semester II: Chemistry Group**

Sr. No.	Subject	Teaching / Week (Hours/Week)				Examination Scheme (Marks)		
		L	P	T	Total	Theory	Term Work	Total
1.	Engineering Chemistry	03	02	-	05	100	25	125
2.	Engineering Mathematics-II	03	-	01	04	100	25	125
3.	Fundamentals of Electronics and Computer \$	03	02	-	05	100	25	125
4.	Applied Mechanics	03	02	-	05	100	25	125
5.	Basic Mechanical Engineering	03	02	-	05	100	25	125
6.	Professional Communication-II	01	02	-	03	-	25	25
7.	Workshop Practice-II	01	02	-	03	-	50	50
	Total	17	12	01	30	500	200	700

\$ should be taught by single faculty ONLY

First Year Engineering: Semester I & II
ENGINEERING PHYSICS

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives: The Engineering students must be conversant with

1. To integrate basic Physics principles and fundamentals with 'Engineering Applications'.
2. To understand and study basic principles behind the developments in 'Engineering Materials'.

SECTION I

Unit 1: Diffraction and Polarization (7)

A) Diffraction: Introduction, diffraction grating - construction, theory, resolving power, resolving power of plane transmission grating.

B) Polarization: Introduction, double refraction, Huygens' theory (positive and negative crystals), optical activity, Laurent's half shade polarimeter, Photo-elasticity.

Unit 2: Laser and Fibre Optics (7)

Absorption, spontaneous emission, stimulated emission, pumping energy, population inversion, characteristics of laser, Ruby laser, applications of laser (industrial & medical), Holography (construction, reconstruction, and applications).

Principle, structure of optical fibre, propagation of light, acceptance angle and acceptance cone (no derivation), numerical aperture (no derivation), types of optical fibre, applications (medical, military, entertainment, communication, optical fibre sensors), advantages of optical fibres.

Unit 3: Nuclear Energy (7)

Introduction, energy released by 1 Kg. of U-235, explosive chain reaction and critical size, nuclear reactor and their classification, essentials of nuclear reactor.

Nuclear fusion (p-p chain, c-n cycle), conditions for fusion reaction, fusion reactor.

SECTION II

Unit 4: Crystallograph (7)

Unit cell, Bravais lattices, properties of unit cell (number of atoms per unit cell, coordination number, atomic radius, packing fraction), relation between density and lattice constant, symmetry elements in cube, Miller indices - procedure, features and sketches for different planes.

X-ray diffraction, Bragg's law, Bragg's x-ray spectrometer.

Unit 5: Quantum Physics (7)

Wave-particle duality, de-Broglie's concept of matter wave, wavelength of matter wave, properties of matter wave, Heisenberg's uncertainty principle, Compton Effect.

Unit 6: Nano Physics

(7)

Concept, production techniques, tools (STM and AFM), properties and applications of nano-materials, CNTs (structure and two types), properties and applications of CNTs.

Term work:

List of Experiments:

At least minimum 8 experiments should be performed from the following list.

1. Biprism experiment
2. Cylindrical obstacle.
3. Calculation of divergence of LASER beam.
4. Determination of wavelength of LASER using diffraction grating.
5. Diffraction grating using mercury vapor lamp.
6. Polarimeter.
7. Verification of inverse square law of intensity of light.
8. Resolving power of plane transmission grating.
9. Measurement of band gap energy.
10. Study of crystal structure.
11. Study of symmetry elements of cube.
12. Determination of 'd' (interplaner distance) using XRD pattern.
13. Study of Planes with the help of models related Miller Indices.
14. Determination of e/m of an electron

Reference Books:

1. Engineering Physics by R. K. Gaur & Gupta S. L, Dhanapat Rai Publication.
2. A Text Book of Engineering Physics by M. N. Avadhanulu & P. G. Kshirsagar, S. Chand Publication.
3. Engineering Physics by B. K. Pandey and S. Chaturvedi, Cengage Learning-2012
4. Modern Physics by B. L. Theraja, S. Chand & Company Ltd., Delhi.
5. A Text Book of Optics by Subramanyam & Brij Lal, S. Chand & Company (P.) Ltd.
6. Solid State Physics: Structure & Electron Related Properties by S. O. Pillai, Eastern Ltd, New Age International Ltd.
7. Introduction to Solid State Physics by Charles Kittel, Wiley India Pvt. Ltd.(8thEdition).
8. Engineering Physics by V. Rajendran, Mc. Graw Hills.
9. Fundamentals of physics by Alan Giambattista and others, Tata Mc. Graw Hills.
10. Engineering Physics by Vijayakumara by Vikas publication
11. Physics Volume-I by Resnick Halliday, Krane, John Wiley & Sons Pub.
12. Physics Volume-II by Resnick Halliday, Krane, John Wiley & Sons Pub.

First Year Engineering: Semester I
ENGINEERING MATHEMATICS I

Teaching scheme:
Lectures: 3 Hrs
Tutorial: 1 Hr

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives:

1. To teach Mathematical methodologies and models.
2. To develop mathematical skills and enhance logical thinking power of students.
3. To provide students with skills in integral calculus, differential equations & numerical techniques which would enable them to devise engineering solutions for given situations they may encounter in their profession.
4. To produce graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in the solution of problems, principally in the area of engineering.

SECTION I

Unit 1: Matrices and solution of linear system equations (5)

1. Rank of matrix: definition, normal form and Echelon form
2. Consistency of linear system equations
3. System of linear homogeneous equations
4. System of linear Non-homogeneous equations

Unit 2: Eigen Values and Eigen vectors (8)

1. Linear dependence and independence of vectors
2. Eigen Values
3. Properties of Eigen Values
4. Eigen vectors
5. Properties of Eigen vectors
6. Cayley-Hamilton's theorem (Without proof)
7. Inverse and higher powers of matrix by using Cayley-Hamilton's theorem

Unit 3: Complex Numbers (8)

1. De Moivre's Theorem (Without proof)
2. Roots of complex numbers by using De Moivre's Theorem
3. Expansion of $\sin n\theta$ and $\cos n\theta$ in powers of $\sin\theta$ and /or $\cos\theta$.
4. Circular functions of a complex variable - definitions
5. Hyperbolic Functions, Relation between Circular & Hyperbolic functions
6. Inverse Hyperbolic Functions
7. Separation into real and imaginary parts

SECTION II

Unit 4: Expansion of Functions and Indeterminate forms: (7)

1. Maclaurin's theorem
2. Standard expansions

3. Taylor's theorem
4. Expansion of function in power series by using
 - i) Standard series method,
 - ii) Differentiation and integration method,
 - iii) Substitution method
5. Indeterminate forms and L' Hospital's rule

Unit 5: Partial Differentiation: (8)

1. Partial derivatives: Introduction
2. Total derivatives
3. Differentiation of implicit function
4. Euler's theorem on homogeneous function of two variables
5. Change of variables
6. Jacobian, Properties of Jacobian, Jacobian of Implicit function,
7. Errors and Approximation
8. Maxima and Minima of functions of two variables

Unit 6: Numerical Solution of linear simultaneous equations: (6)

1. Gauss elimination method
2. Gauss-Jordan method
3. Jacobi's iteration method
4. Gauss-Seidel iteration method
5. Determination of Eigen values by iteration

General Instructions:

1. Batch wise tutorials are to be conducted. The number of students per batch should be as per the university pattern for practical batches.
2. Minimum number of assignments should be 8 covering all topics.

Recommended Books:

1. A text book of Applied Mathematics, Vol.I by P. N. Wartikar & J. N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.
2. Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers, Delhi.

Reference Books:

1. Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India Pvt. Ltd.
2. Advanced Engineering Mathematics by H. K. Dass, S. Chand, New Delhi.
3. A text book of Engineering Mathematics Volume I by Peter V. O'Neil and Santosh K. Sengar, Cengage Learning.
4. Mathematical methods of Science and Engineering by Kanti B. Datta, Cengage Learning.
5. Numerical methods by Dr. B. S. Grewal, Khanna Publishers, Delhi.
6. A text book of Engineering Mathematics by N. P. Bali, Iyengar, Laxmi Publications (P) Ltd., New Delhi.

First Year Engineering: Semester I & II
BASIC ELECTRICAL ENGINEERING

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives:

The objective of this course is to provide the students with an introductory and broad treatment of the field of Electrical Engineering

SECTION I

Unit 1: D C Circuits (8)

A) Analysis of D.C. circuits: Kirchhoff's laws, mesh and node analysis, Energy conversions between electrical, mechanical, thermal quantities.

B) Magnetic circuits: Series magnetic circuits.

Unit 2: Single phase AC Circuits (8)

Generation of sinusoidal voltage, R.M.S. & Average value, form factor, phasor representation of A.C. quantities, impedance, admittance, R-L, R-C, R-L-C series and parallel circuits powers, p.f., power factor improvement by capacitor method.

Unit 3: Earthing and lamps (5)

Necessity of Earthing, Earthing methods, Fuse, MCB, Fluorescent tube, CFL, mercury vapour lamp, LED lamp, single line diagram of electrical system, study of energy meter.

SECTION II

Unit 4: Three phase A.C. Circuits (8)

Introduction to 3 phase supply and its necessity, Generation of three phase A.C. voltage, balanced three phase system, relation between line and phase quantities

Unit 5: A.C. Machines (8)

A) Single phase Transformer: Construction, operating principle, Types, emf equation, Ratios of voltage and current, operation on no load and with load, power losses, efficiency, All day efficiency, voltage regulation, applications, autotransformer.

B) Single phase alternator: Construction, types, operating principle, emf equation, alternator on load, Voltage regulation, (Theoretical treatment)

Unit 6: Single phase A.C. motor (5)

Construction, operating principle, T-N characteristics, applications of induction motor and universal motor

Term work:

List of Experiments: Minimum 8 experiments should be performed from the following list.

1. Laboratory Sessions covering, General introduction to Electrical Engineering Laboratory, experimental setups, instruments etc., Electrical Symbols.
2. Electric Shocks and precautions against shocks; Basic methods of Earthing.
3. Verification of Kirchhoff's Voltage Law and Kirchhoff's Current Law
4. B-H curve of magnetic material
5. Serial and Parallel resonance- Tuning, Resonant frequency, Bandwidth and Q factor determination for RLC network
6. Demonstration of PF improvement
7. Measurement of active and reactive power in balanced 3-phase circuit using Two-watt meter method.
8. Polarity and Ratio Test for single Phase Transformer; Pre-determination of efficiency and regulation by Open Circuit and Short circuit tests on single phase transformer.
9. Introduction to domestic wiring, service mains, meter board and distribution board; Wiring of two way and three way switching of lamp; Use of Fuse and Miniature Circuit breaker.
10. Study of different luminaries including Incandescent lamp, vapor lamps, fluorescent tube, CFL, LED lamps.

Self-Learning activity:

1. Study of car battery systems
2. Study of domestic electric bill and understanding various costs involved. Classification of consumers
3. Preparation of Illumination scheme for any of the following
 - a. Class room
 - b. Laboratory
 - c. Bank or corporate office
 - d. Landscape
 - e. Outdoor Illumination of sports ground
4. Study of domestic electrical appliances- Working principle, construction, components and troubleshooting
5. Study of wiring layout service mains, meter board and distribution boards and preparation of Bill of Materials and estimation for electrification of a building.

Reference Books:

1. Electrical Engineering Concepts and Applications by P. V. Prasad and S. Shivanaraju, CENGAGE Learning.
2. Fundamentals of Electrical Engineering by Bharati Dwivedi and Anurag Tripathi, Wiley PRECISE Text Book.
3. Basic Electrical Engineering by Nagrath I.J. and D. P. Kothari, Tata McGraw Hill (2001).
4. Fundamentals of Electrical Engineering by Ashfaq Husain, Dhanpat Rai & Company.
5. Electrical Technology Vol II by B.L Theraja, S. Chand

First Year Engineering: Semester I & II
BASIC CIVIL ENGINEERING

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives: The student will be able

1. To understand relevance of Civil Engineering.
2. To understand significance of building system.
3. To understand the use of different survey instruments for the field operations.

SECTION I

Unit 1: Relevance of Civil Engineering and Building Planning (7)

Introduction, branches of civil engineering, application of civil engineering in other allied fields. Principles of planning, introduction to Bye-Laws regarding building line, height of building, open space requirements, F.S.I., setbacks, ventilation, sanitation as per municipal corporation area requirement.

Unit 2: Components of Building (7)

A) **Sub-structure:** Types of soil and rocks as foundation strata, concept of bearing capacity, types of foundations i.e. shallow and deep and their suitability. Shallow foundation such as wall foundation, isolated foundation, deep foundation such as pile foundation.

B) **Super-structure:** Elements of super-structures and their functions

Unit 3: Building Materials and Design (7)

Use and properties of the following materials,

Concrete – ingredients and grades, plain and reinforced cement concrete and ready mix concrete, bricks, steel, aluminum, plastic, timber, roofing materials etc.

Introduction to types of loads, load bearing and framed structures.

SECTION II

Unit 4: Linear and Angular Measurements (7)

Principles of surveying, Classification of surveys, Chain Surveying, Introduction to metric chain and tapes, error in chaining, nominal scale and R.F., ranging, chaining and offsetting, index plan, location sketch and recording of field book, Chain and compass survey, Meridian, bearing and its types, system of bearing, Types of compass: prismatic and surveyor's compass. Calculation of included angles, correction for local attraction.

Unit 5: Leveling (7)

Terms used in leveling, use of Dumpy level and Auto Level, temporary adjustments. Methods of reduction of levels, types of leveling, Contours, characteristics of contours, use of contour maps. Introduction and use of EDM's with special reference to Total Station.

Measurement of area by planimeter – mechanical and digital.

Unit 6: Introduction to Transportation, Environmental and Irrigation Engineering (7)

Components of rigid and flexible pavement, components of railway track (Broad Gauge)
Components of water supply scheme (flow diagram), Types of Dams (Earthen and Gravity Dam)

Term work:

List of Experiments: Minimum 8 experiments should be performed from the following list. Practical exercises given be carried out and drawing sheets be plotted wherever necessary.

1. Introduction to Measurement of Distances.
2. Plotting the outlines of building by chaining, ranging and offsetting.
3. Plotting of closed traverse by prismatic compass.
4. Reduction of levels by rise and fall method.
5. Reduction of levels by collimation plane method.
6. Measurement of area by mechanical/digital planimeter
7. Study of total station for various measurements.
8. Site visit to study various construction processes
9. Drawing sheet showing various building elements.

Reference Books:

1. Basic Civil Engineering by S. S. Bhavikatti, New Age International Publications.
2. Civil Engineering Materials - Technical Teacher's Training Institute, Chandigarh
3. Surveying by N. Basak, Tata Mc-Graw Hill Publication.
4. Basic Civil Engineering by G. K. Hiraskar, Dhanpat Rai Publication.
5. Surveying Vol.I, Vol.II, Vol.III by B.C. Punmia, Laxmi Publication.
6. Irrigation Engineering by B. C. Punmia, Dhanpat Rai Publications.

**First Year Engineering: Semester I & II
ENGINEERING GRAPHICS**

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives:

1. Students should be able to visualize the objects.
2. They should be able to understand and read drawing.
3. They should be able to present the same.

SECTION I

Unit1: Fundamentals of Engineering Graphics& Engineering Curves (6)

A) Fundamentals of Engineering Graphics: Introduction to Drawing instruments and their uses. Layout of drawing sheets, different types of lines used in drawing practice, Dimensioning system as per BIS (Theoretical treatment only)

B) Engineering curves: Construction of regular polygons (up to hexagon). Construction of Ellipse, Parabola, Hyperbola, Involute, Archimedian spiral and Cycloid only.

Unit 2: Projections of lines & Planes (10)

A) Projections of lines: Introduction to First angle and third angle methods of projection. Projections of points on regular reference planes. Projections of horizontal, frontal and Profile lines on regular and auxiliary reference planes. Projection of oblique lines it's True length and angle with reference planes by rotation and auxiliary plane method. Concept of grade and bearing of line, Point View of a line, Projections of intersecting lines, Parallel lines, perpendicular lines and skew line. (Use coordinate system only)

B) Projections of planes: Projections on regular and on auxiliary reference planes. Types of planes (horizontal, frontal, oblique and Profile planes). Edge view and True shape of a Plane. Angles made by the plane with Principle reference planes. Projections of plane figures inclined to both the planes. (Circle and regular polygon) (Use coordinate system)

Unit 3: Projections of solids (5)

Projections of Prisms, Pyramids, Cylinder and Cones inclined to both reference planes (Excluding frustum and sphere)

SECTION II

Unit 4: Orthographic Projections (7)

Orthographic views: lines used, Selection of views, spacing of views, dimensioning and sections. Drawing required views from given pictorial views (Conversion of pictorial view into orthographic view) including sectional orthographic view.

Unit 5: Isometric projections (7)

Isometric projections: Introduction to isometric, Isometric scale, Isometric projections and Isometric views / drawings. Circles in isometric view. Isometric views of simple solids and objects.

Unit 6: Sections of solids & Development of surfaces (7)

A) Sections of solids: Prisms, Pyramids, Cylinders and Cones (Simple positions and inclined to one plane and parallel to other)

B) Development of plane and curved surfaces: Prisms, Pyramids, Cylinders and Cones along with cutting planes.

Note: The above syllabus is to be covered according to the first angle method of projection.

Self-Study: Geometrical constructions and free hand sketches, Missing Views

Term work:

The following seven sheets are to be drawn based on the above topics. All these sheets should be drawn on half imperial (A3 size) drawing sheets only.

1. Engineering curves	01
2. Projections of lines and planes	02
3. Projections of solids	01
4. Orthographic projections	01
5. Isometric projections	01
6. Sections of solids and development of surfaces	01

Reference Books:

1. Engineering Drawing by N. D. Bhatt, Charotar Publication House, Bombay
2. Fundamentals of Engineering by W. J. Luzadder, Drawing, Prentice Hall of India.
3. Engineering Design and Visualization by Jon M. Duff, William A. Ross, CENGAGE Learning
4. Machine Drawing by N. D. Bhatt, Charotar Publication House, Bombay.
5. Graphic Science by French and Vierck, Mc-Graw Hill International.
6. Engineering Drawing and Graphics by K. Venugopal, New Age Publication
7. A text book of Engineering Drawing by R. K. Dhawan, S. Chand and Co.
8. Machine Drawing by K. L. Narayana, New Age Publication
9. Engineering Drawing by N. B. Shaha and B. C. Rana, Pearson Education.
10. Engineering Drawing and Graphics Using AutoCAD by T. Jeyapoovan, Vikas Publication.
11. Engineering Drawing by Prof. Amar Pathak, WILEY India Publication.

First Year Engineering: Semester I
PROFESSIONAL COMMUNICATION-I

Teaching scheme:
Lectures: 1 Hr
Practical: 2 Hrs

Examination scheme:
Term Work: 25 Marks

Unit 1: Understanding Communication (2)

1. Introduction, nature and importance
2. Process of communication
3. Basic types of communication- Verbal and Non- verbal
4. Barriers and filters of communication

Unit 2: Grammar and Vocabulary (3)

1. Forms of Tenses
2. LSRW skills
3. Types of Sentences
4. Pairs of confused words

Unit 3: Phonetics (3)

1. Understanding Phonetics
2. List of phonetic alphabets
3. Transcription, Stress and Intonation

Unit 4: Developing Oral Skills (2)

1. Importance and techniques to improve oral communication:
2. Techniques of formal speech, meetings, Elocution, Extempore etc.

Unit 5: Professional Correspondence (4)

1. Importance, language and style, formats (British & American)
2. Letter Writing – Simple application letter (seeking permission regarding absence etc.), Inquiry and its reply, placing an order, complaint and its adjustment and email etc.

Term Work: Minimum 8 should be performed from the following list.

1. Elocution
2. Vocabulary building
3. Phonetic Alphabets (Listen & repeat)
4. Pronunciation
5. Fluency Tips
6. Extempore
7. Teamwork- story making
8. Effective reading (newspaper articles)
9. Active listening (memorizing)
10. Grammar activities
11. Letter writing Activities
12. Situational conversation

Instructions:

1. Minimum 8 assignments should be covered.
2. Use of language laboratory is mandatory for both the semesters.

Reference Books:

1. Handbook for Technical Writing by David A. McMurrey, Joanne Buckley, Cengage.
2. A Course in English by J.D. O'Connor.
3. Better English Pronunciation by J.D. O'Connor.
4. Communication Skills Handbook: How to succeed in written and oral communication by Jane Summers, Brette Smith, Wiley India Pvt.Ltd.
5. Personal Development for Life and Work by Masters, Wallace, Cengage.
6. Soft Skills for Managers by Dr. T. Kalyana Chakravarthi, Dr. T. Latha Chakravarthi, Biztantra.
7. Soft Skills for every one by Jeff Butterfield, Cengage.
8. Behavioural Science by Dr. Abha Singh, Wiley India Pvt.Ltd.
9. An Introduction to Professional English and Soft Skills by Bikram K. Das, Kalyani Samantray, Cambridge University Press New Delhi.
10. Speaking Accurately, K.C. Nambiar, Cambridge University Press New Delhi.
11. Speaking Effectively by Jeremy Comfort, Pamela Rogerson, Cambridge University Press New Delhi.
12. Cambridge English for Job Hunting by Colm Downes, Cambridge University Press New Delhi.
13. Body Language by Allen Pease.
14. The Ace of Soft Skills by Gopalswami Ramesh, Mahadevan Ramesh, Pearson Publication, Delhi.
15. Decision Making Skills by Khanka S.S.
16. Business Ethics and Communication by C.S. Tejpal Sheth.
17. Write Right by Syed Abdur Raheem.

First Year Engineering: Semester I & II
WORKSHOP PRACTICE-I

Teaching scheme:
Lectures: 1 Hr
Practical: 2 Hrs

Examination scheme:
Term Work: 50 Marks

Unit 1: Safety (3)

Concept of accidents, causes of accidents, safety precautions while working in shop, safety equipments and their use.

Unit 2: Measuring Instruments (3)

Brief introduction to instruments like – Steel rule, Calipers, Vernier Caliper, Micrometer, Dial Gauge, Vernier height Gauge etc. Least counts, common errors and care while using them, Use of marking gauge, 'V'block and surface plate.

Unit 3: Smithy (4)

Introduction to smithy operations like- bending, forming, upsetting, drawing. Smithy tools- hammer, hot & cold chisel flatters, tongs, anvil etc.

Unit 4: Fitting (4)

Study of various tools like- files, drills, taps, dies. Fitting operations.

Term work:

The term work consists of assignment on safety, measuring instruments, Smithy and fitting.

Every student should perform,

1. Smithy

One job in smithy involving upsetting, Drawing, bending such as- Hook, peg, square headed bolt etc.

2. Fitting

One job Male/Female fitting with operations- Marking, cutting, drilling, tapping filing etc.

Reference Books:

1. A Course in Workshop Technology, Vol – I by B. S. Raghuvanshi, Dhanapat Rai and Sons.
2. Elements of Workshop Technology, Vol – I by Hajara Chaudhari, Media Promoters.
3. Workshop Technology, Vol – I by Gupta and Kaushik, New Heights.
4. Workshop Technology, Vol – I by Chapman, The English Language Book Society.
2. Workshop Technology, Vol.-I by H.S. Bawa, TMH Publications, New Delhi.

First Year Engineering: Semester I & II
ENGINEERING CHEMISTRY

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives:

1. To integrate pure chemistry principles and fundamentals with engineering applications.
2. To understand the chemistry behind the development of engineering materials.
3. To develop an analytical ability of students.

SECTION I

Unit 1: Water (7)

Introduction, impurities in natural water, water quality parameters total solids, acidity, alkalinity, chlorides, and dissolved oxygen (definition, causes, significance), hardness of water (causes, types, units of hardness), ill effects of hard water in steam generation in boilers, numerical on hardness, treatment of hard water (ion exchange and reverse osmosis).

Unit 2: Instrumental methods of chemical analysis (7)

Introduction, advantages and disadvantages of instrumental methods.

A) pH-metry: Introduction, pH measurement using glass electrode, applications of pH-metry.

B) Spectrometry: Introduction, Laws of spectrometry (Lamberts and Beer-Lambert's law), Single beam spectrophotometer (schematic, working and applications).

C) Chromatography: Introduction, types, gas-liquid chromatography (GLC), basic principle, instrumentation and applications.

Unit 3: Advanced materials (7)

A) Polymers: Introduction, plastics, thermosoftening and thermosetting plastics, industrially important plastics like phenol formaldehyde, urea formaldehyde and epoxy resins, conducting polymers (doping, conjugation, conductivity), examples and applications, biodegradable plastics.

B) Nanomaterials: Introduction, synthesis and applications.

C) Composite materials: Introduction, constituents, types of composites, advantages, composition, properties and uses of fiber reinforced plastics (FRP) and glass reinforced plastic (GRP).

SECTION II

Unit 4: Fuels (7)

Introduction, classification, calorific value, definition, units (calorie, kcal, joules, kilojoules), characteristics of good fuels, comparison between solid, liquid and gaseous fuels, types of calorific value (higher and lower), Bomb calorimeter and Boy's calorimeter. Numerical on Bomb and Boy's calorimeter. Fuel cells: Introduction, classification, advantages, limitations and applications.

Unit.5: Corrosion: (7)

Introduction, causes, classification, atmospheric corrosion (oxidation corrosion), electrochemical corrosion (hydrogen evolution and oxygen absorption mechanism), factors affecting rate of corrosion. Prevention of corrosion by proper design and material selection, hot dipping (galvanizing and tinning), cathodic protection, metal spraying and electroplating.

Unit 6: Metallic materials & Green Chemistry (7)

A) Metallic materials: Introduction, alloy definition and classification, purposes of making alloys. Ferrous alloys: Plain carbon steels (mild, medium and high), stainless steels. Nonferrous alloys: Copper alloy (Brass), Nickel alloy (Nichrome), Aluminum alloy (Duralumin and Alnico), Tin alloy (Solder metal).

B) Green Chemistry: Definition, goals of green chemistry, significance, basic components of green chemistry research, industrial applications.

Term work:**List of Experiments:**

Minimum 8 experiments should be performed from the following list out of which two experiments should be demonstrative on instrumental methods.

1. Determination of acidity of water.
2. Determination of alkalinity of water.
3. Determination of chloride content of water by Mohr's method.
4. Determination of total hardness of water by EDTA method.
5. Determination of moisture, volatile and ash content in a given coal sample by proximate analysis.
6. Preparation of urea-formaldehyde resin.
7. Preparation of phenol-formaldehyde resin.
8. Determination of percentage of copper in brass.
9. Estimation of zinc in brass solution.
10. Determination of rate of corrosion of aluminium in acidic and basic medium.
11. Demonstration of pH meter.
12. Demonstration of photo-colorimeter / spectrophotometer.
13. Demonstration of paper chromatography.

Reference books:

1. Engineering Chemistry by Jain and Jain, Dhanpat Rai Publishing Company Ltd., New Delhi.
2. A Textbook of Engineering Chemistry by S. S. Dara and S. S. Umare, S. Chand & Company Ltd., New Delhi.
3. A Textbook of Engineering Chemistry by C. P. Murthy, C. V. Agarwal and A. Naidu, BS Publications, Hyderabad.
4. Chatwal and Anand, Instrumental Methods of Chemical Analysis, Himalaya Publishing House, New Delhi.
5. Engineering Chemistry by Dr. A. K. Pahari and Dr. B. S. Chauhan, Laxmi Publications (P) Ltd, New Delhi.
6. A text Book of Engineering Chemistry by Shashi Chawla, Dhanpat Rai & Co. (Pvt.) Ltd, Delhi.
7. Engineering Chemistry by Wiley India.
8. Engineering Chemistry by Renu Bapna and Renu Gupta, MacMillan Publishers (India) Ltd, Delhi.

First Year Engineering: Semester I & II
FUNDAMENTAL OF ELECTRONICS AND COMPUTER

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives:

1. To understand testing and measurement of Electronic Components.
2. To understand construction, biasing, V-I characteristics and application of Diode and BJT.
3. To gain knowledge of operational amplifiers.
4. To understand basics of sequential & combinational logics
5. To understands Basics of Transducers.
6. To study basics of Computer hardware & software.
7. To expose students to Program building blocks.
8. To understand the basics of networks & Internet.
9. To provide hands on exposure to use of different application software.

SECTION I

Unit 1: Semiconductor Devices and Applications (7)

Half wave & full wave rectifiers, BJT characteristics, load line, operating point, leakage currents, saturation and cut off mode of operations, Need for stabilization, fixed bias, emitter bias, self-bias, bias stability with respect to variation in I_{co} , V_{BE} & β , Stabilization factors, thermal stability. RC coupled CE amplifier. Regulated power supply,

Unit 2: Digital Electronics (7)

Logic gates – Basic gates, Universal Gates. Boolean Algebra, Logic Families, sequential logic, half adder, full adder, multiplexer, de-multiplexer, Combinational logic, Flip flops (JK Flip flop).

Unit 3: Applications (7)

A) Transducers: for Displacement, level, Temperature, Pressure, Speed measurement, Range Specifications, Limitations.

B) Appliances: Block diagram, Specifications, Operation and use of the Appliances: Digital Thermometer, Digital watch, weighing Machine, Washing machine, Microwave oven and Mobile Handset.

SECTION II

Unit 4: Computer Basics and Hardware (7)

A) Computer Basics:

- a) Generations & classification of computers
- b) Computer System components – CPU, Input Unit, Output unit, storage unit
- c) Applications of Computers

B) Computer Architecture: Details of components of a digital computer system – CPU, communication among various units, Instruction format, cycle, inside a computer system.

Unit 5: Data representation and Computer Software (7)

A) Data representation in computer: Types of number system – Binary, octal, Hexadecimal & their conversions, coding schemes – ASCII, Unicode.

B) Computer Software:

- a) Operating System: Types of operating system, Functions, Unix/Linux, Windows 7 - structures & features, Unix/Linux commands: Listing, changing, copying, moving files & directories (ls, cd, cat, mkdir, rmdir, other commands), any editor in Linux.
- b) System Software: Assembler, Interpreter, compiler.
- c) Application Software's: Word processor, spreadsheets, presentation, application, DBMS, etc.

Unit 6: Computer Programming and Networks (7)

A) Computer Programming & Languages: Program Development Cycle, Algorithm, flowchart, Programming Control Structures – sequence, selection, repetition, Programming Languages: Introduction to low level & high level programming languages.

B) Introduction to computer networks: Definition of computer network, need, Standards: OSI, TCP/IP, types of Networks: LAN, WAN, MAN, Topologies, Internet www, emerging computing environment.

Term work: FUNDAMENTAL OF ELECTRONICS

List of Experiments: Minimum 4 experiments should be performed from the following list.

1. Testing of Electronic components- resistors, capacitors, inductor, diode, transistor, LED and switches using multi-meter & C.R.O.
2. V-I Characteristics of PN junction diode and zener diode.
3. Study of Half and Full wave rectifiers and their comparison.
4. Study of Frequency response of CE amplifier
5. Study of truth tables of logic Gates: OR, AND, NOT, NAND, NOR, EXOR.
6. Measurement of Distance using LVDT/strain Gauge.
7. Measurement of Temperature using any transducer.
8. Study of Mobile Handset.

Self-LearningActivities: Different types of Communication systems & Communication Media.

Term work: FUNDAMENTAL OF COMPUTER

List of Experiments: Minimum 4 experiments should be performed from the following list.

1. Study of computer system – Internal Components & peripherals.
2. Use of Unix/Linux commands & create a file using any editor in Linux.
3. Create a document using any word processor (In Linux (open office) /Windows (Microsoft office)).
4. Use any spreadsheet application to manipulate numbers, formulae and graphs (In Linux/Windows).
5. Use any power point presentation application and create a professional power point presentation using text, image, animation etc. (In Linux/Windows).
6. An assignment based on use of Internet and Web for searching and downloading Technical information.
7. Study of Tablet and Android Operating System Features and applications.

Text Books:

1. A Text Book of Applied Electronics by R S Sedha, S. Chand
2. Basic Electronics Engineering by Vijay Baru, Rajendra Kaduskar, S T Gaikwad (Wiley/DREAMTECH)
3. Digital Principals & Applications by Albert Malvino, Donald Leach, TMGH Publication.
4. Principle of Electronics by V.K. Mehata, S. Chand
5. Electronic Instrumentation by H. S. Kalasi, Tata McGraw Hills Publication

Reference Books:

- 1) Electronics Devices and Circuit Theory by Robert L. Boylestad and Louis Nashelsky (Pearson Education Publication)
- 2) Fundamental of Digital Circuits by A. Anand Kumar (PHI- Publication)
- 3) Fundamental of Electronics Engineering by R.Prasad (CENGAGE- Learning)
- 4) Introduction to Information Technology, ITL Education Solutions LTD. Pearson Education
- 5) Fundamentals of Computers by V. Rajaram, PHI Publications.
- 6) UNIX concepts and applications by Sunitabha Das, TMGH.
- 7) Computer Fundamentals Architecture & Organization by B. Ram New Age International Publishers.

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First Year Engineering: Semester I & II
APPLIED MECHANICS

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives:

1. To understand the various force systems and its effect on static bodies and moving bodies.
2. To understand the concept of equilibrium.
3. To understand geometric properties of plain laminae.
4. To understand dynamics of rigid bodies.

SECTION I

Unit 1: Fundamentals of Statics (7)

Basic Concepts and Fundamental Laws, Force, Moment and Couple, System of Forces, Resultant, Resolution and Composition of Forces, Varignon's Theorem, Law of Moments.

Unit 2: Equilibrium (7)

Lamis' Theorem, Free Body Diagram, Equilibrium of Forces, Equilibrium conditions, Surface friction for bodies on horizontal and inclined planes.

Beams: Types of Loads, Types of supports, Analysis of Simple beams, Virtual work method for support reactions.

Unit 3: Analysis of Truss (7)

Types of Trusses, Assumptions, Methods of Analysis:- Method of Joints, Method of Section, Analysis of Simple truss with maximum seven members.

SECTION II

Unit 4: Centroid and Moment of Inertia (7)

Centroid and Center of Gravity, Moment of Inertia of Standard shapes from first principle, Parallel and perpendicular axis theorem, Moment of Inertia of plain and composite figures, Radius of Gyration.

Unit 5: Kinetics of Linear and Circular motion (9)

Introduction to Kinematics of Linear and Circular motion (no numerical on kinematics), Kinetics of linear motion, Newton's Laws, D'Alembert's Principle, Work- Energy Principle, Impulse Momentum Principal, Kinetics of Circular Motion

Unit 6: Impact and Collision (5)

Impact, Types of Impact, Law of conservation of Momentum, Coefficient of Restitution, Numerical on Direct central Impact.

Term work:**List of Experiments:**

- A) Experiments: Any four experiments from
1. Law of polygon of forces
 2. Jib crane
 3. Bell crank lever
 4. Support Reactions of Beam
 5. Fleture's Trolley
 6. Centrifugal force
- B) Graphics Statics:
1. To find support reactions - 3 problems
 2. To find unknown forces of a truss - 2 problems
- (All above problems will be solved on A3 size drawing sheet)
- C) Home Assignments based on each unit (minimum 6 assignments)

Reference Books:

1. Engineering Mechanics by S. S. Bhavikattis, New Age International Pvt. Ltd.
2. Engineering Mechanics by R. K. Bansal and Sanjay Bansal.
3. Vector Mechanics for Engineers Vol.I and II by F. P. Beer and E. R. Johnston, Tata Mc-Graw Hill Publication.
4. Engineering Mechanics by Manoj K Harbola, Cengage Learning
5. Engineering Mechanics by K. I. Kumar, Tata Mc-Graw Hill Publication.
6. Engineering Mechanics by S. B. Junnerkar.
7. Engineering Mechanics by Irving H. Shames, Prentice Hall of India, New Delhi.
8. Applied Mechanics by S. N. Saluja, Satya Prakashan, New Delhi.
9. Engineering Mechanics by Statics and Dynamics by Ferdinand Singer, Harper and Row Publications.
10. Engineering Mechanics by R. S. Khurmi, S. Chand Publications.
11. Fundamentals of Engineering Mechanics by S. Rajasekaran, G. Sankarasubramanian, Vikas Publishing House.

First Year Engineering: Semester I & II
BASIC MECHANICAL ENGINEERING

Teaching scheme:
Lectures: 3 Hrs
Practical: 2 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives: The course will help the student to

1. Acquire basic knowledge of mechanical engineering
2. Impart knowledge of basic concepts of thermodynamics applied to industrial application
3. Understand principle of energy conversion system and power plants
4. Understand and identify power transmission devices with their functions
5. Learn and understand manufacturing process
6. Describe the scope of mechanical engineering in multidisciplinary industries

SECTION - I

Unit 1: Thermodynamics (7)

Thermodynamic State, Process, Cycle, Thermodynamic System, Heat, work, Internal Energy, First Law of Thermodynamics, Application of First Law to steady Flow and Non-Flow processes, Limitations of First Law (Numerical Treatment) Statements of Second Law of Thermodynamics.

Unit 2: Introduction to I C Engine (7)

Carnot Engine, Construction and Working of C.I. and S.I., Two stroke, Four Stroke Cycles, Air standard cycles- Carnot Cycle, Joule Cycle, Otto Cycle, Air Standard efficiency (Descriptive Treatment only)

Unit 3: Introduction to Refrigeration and Air Conditioning (7)

Carnot refrigerator, Refrigerant types and properties, Vapour compression and vapour absorption system, solar refrigeration, Window Air Conditioning, Psychometric properties of moistair, Applications of refrigeration and air conditioning (Descriptive Treatment only).

SECTION-II

Unit 4: Energy Sources and power plants (7)

Renewable and nonrenewable, Solar-flat plate collector, concentric collector-Parabolic and cylindrical, Photovoltaic cell, Wind, Geothermal, Tidal, Hydropower plant, Steam Power plant, Bio-gas, Bio-Diesel (Descriptive Treatment only).

Unit 5: Mechanical Power Transmission and Energy conversion devices (7)

Type of Belt and belt drives, chain drive, Types of gears and gear Trains, Types of Coupling, Types of Bearings (Numerical Treatment on belt drive), Types, Construction, working and applications of Pumps, compressor and Hydraulic Turbines.

Unit 6: Manufacturing Processes (7)

Introduction to manufacturing processes - Casting Process, Steps involved in casting

processes, and their applications, Metal removing processes and their applications, Metal Joining Processes – welding, soldering and brazing and their applications.

Term Work:

List of experiments: Minimum 8 experiments should be performed from the following list.

1. Demonstration of I.C. engine
2. Demonstration of Two stroke and four stroke engine
3. Demonstration of vapour compression refrigeration system and window air conditioner.
4. Demonstration of solar water heating system.
5. Industrial visit to steam power plant or Hydroelectric power plant
6. Demonstration of Diesel power plant
7. Demonstration of types of Gears and gear trains.
8. Demonstration of pumps and compressor.
9. Demonstration of hydraulic turbine
10. Demonstration of metal joining processes.
11. Demonstration of metal removal processes

Reference Books:

1. Solar Energy by Dr.S.P. Sukathame, Tata Mc-Graw Hill Publication
2. Non-Conventional Sources of Energy by G.D. Rai, Khanna Publication
3. Engineering Thermodynamics by R.Joel, The English Language Book Society.
4. Engineering Thermodynamics by Achultan, Prentice Hall of India.
5. Thermal Engineering by R.K. Rajput, Laxmi Publication, Delhi.
6. Elements of Heat Engine Vol.I,II,III by Patel and Karamchandani, Acharya Book Depot.
7. Power Plant Engineering by Arora and Domkunwar, Dhanpat Rai and Sons.
8. Manufacturing Technology Volume I and II by P. N. Rao, Tata Mc-Graw Hill Publication
9. Elements of Workshop Technology, Vol.I and II by Hajara Choudhari, Media Promoters
10. Basic Mechanical Engineering by Basant Agrawal & C. M. Agrwal, Wiley India Pvt. Ltd.
11. Energy Technology by S. Rao and Dr.B.B. Parulekar, Khanna Publication.

First Year Engineering: Semester II
ENGINEERING MATHEMATICS II

Teaching scheme:
Lectures: 3 Hrs
Tutorial: 1 Hrs

Examination scheme:
Theory: 100 Marks
Term Work: 25 Marks

Objectives:

1. To teach Mathematical methodologies and models.
2. To develop mathematical skills and enhance logical thinking power of students.
3. To provide students with skills in integral calculus, differential equations & numerical techniques which would enable them to devise engineering solutions for given situations they may encounter in their profession.
4. To produce graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in the solution of problems, principally in the area of engineering.

SECTION-I

Unit 1: Ordinary Differential Equations of First Order and First Degree (7)

1. Linear differential equations
2. Reducible to Linear differential equations
3. Exact differential equations
4. Reducible to Exact differential equations

Unit 2: Applications of Ordinary Differential Equations of First Order and First Degree (6)

1. Applications to Orthogonal trajectories (Cartesian and Polar equations)
2. Applications to Simple Electrical Circuits
3. Newton's law of cooling
4. Rate of decay and growth

Unit 3: Numerical Solution of Ordinary Differential Equations of First Order and First Degree (8)

1. Taylor's series method
2. Euler's method
3. Modified Euler's method
4. Runge-Kutta fourth order formula
5. Simultaneous first order differential equations by Runge-Kutta method

SECTION-II

Unit 4: Special Functions (6)

1. Gamma function and its properties
2. Beta function and its properties
3. Differentiation under integral sign
4. Error function and its properties

Unit 5: Curve Tracing**(6)**

1. Tracing of curves in Cartesian form
 - a) Semi cubical parabola, b) Cissoid of Diocles, c) Strophoid, d) Astroid,
 - e) Witch of Agnesi, f) Common Catenary, g) Folium of Descartes,
2. Tracing of curves in polar form
 - a) Cardioid, b) Pascal's Limacon, c) Lemniscate of Bernoulli, d) Parabola,
 - e) Hyperbola, f) Rose curves
3. Rectification of plane curves (Cartesian and Polar form)

Unit 6: Multiple Integration and its applications:**(9)**

1. Double Integrals and evaluation
2. Change of order of integration
3. Double Integrals in Polar Coordinates
4. Change into Polar
5. Area enclosed by plane curves
6. Mass of a plane lamina
7. Center of Gravity of Plane Lamina
8. Moment of inertia of plane lamina

General Instructions:

1. Batch wise tutorials are to be conducted. The number of students per batch should be as per the university pattern for practical batches.
2. Minimum number of assignments should be 8 covering all topics.

Recommended Books:

1. A text book of Applied Mathematics, Vol.-I by P. N. Wartikar & J. N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.
2. A text book of Applied Mathematics, Vol.-II by P. N. Wartikar & J. N. Wartikar, Pune Vidyarthi Griha Prakashan, Pune.
3. Dr. B. S. Grewal - Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers, Delhi.

Reference Books:

1. Higher Engineering Mathematics by B.V.Ramana, Tata McGraw-Hill Publications, New Delhi
2. Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India Pvt. Ltd.
3. Advanced Engineering Mathematics by H. K. Dass.
4. Mathematical methods of Science and Engineering by Kanti B. Datta, Cengage Learning.
5. A textbook of Engineering Mathematics Volume I by Peter V. O'Neil and Santosh K. Sengar, Cengage Learning.
6. A textbook of Engineering Mathematics by N. P. Bali, Iyengar, Laxmi Publications (P) Ltd., New Delhi.

First Year Engineering: Semester I & II
WORKSHOP PRACTICE- II

Teaching scheme:
Lectures: 1 Hr
Practical: 2 Hrs

Examination scheme:
Term Work: 50 Marks

Unit 1: Welding (4)

Types of welding – gas welding, arc welding, resistance welding, Welding equipment's, welding of various metals, electrode classification and coding, welding joints.

Unit 2: Carpentry (4)

Introduction, Classifications of wood, common varieties of Indian timber, carpentry tools like- Marking tools, cutting tools, planes, striking tools, holding tools. Carpentry operations- marking, sawing, chiseling, grooving etc. carpentry joints.

Unit 3: Sheet metal work (4)

Specifications of metal sheets, working tools, sheet metal operations like-cutting, bending, folding, punching, revetting and joining by brazing and soldering.

Unit 4: Air pollution: (2)

Air pollution due to automobiles, causes, PUC testing.

Term work:

The term work consists of assignment on Welding, Carpentry, Sheet metal work, Air pollution. Every student should perform

1. Welding:

One job on Arc welding- Lap / Butt Joint etc. (For individual student)

OR

Table, Shoe stand, Bag stand etc. (For 4-6 students)

2. Carpentry :

One composite job involving dovetail joint, T joint, cross halving joint, pen stand etc. (For individual student)

OR

Table, Teapot, Stool etc. (For 4-6 students)

3. Sheet metal Work:

One job on commercial items such as Dust bin, funnel, tray etc.

Reference Books:

1. A Course in Workshop Technology, Vol – I by B. S. Raghuvanshi, Dhanapat Rai and Sons.
2. Elements of Workshop Technology, Vol – I by Hajara Chaudhari, Media Promoters.
3. Workshop Technology, Vol – I by Gupta and Kaushik, New Heights.
4. Workshop Technology, Vol – I by Chapman, The English Language Book Society.
5. Workshop technology, Vol.-I by H.S. Bawa, TMH Publications, New Delhi.
6. I.C. Engines by Mathur & Sharma, Dhanpat Rai Publications, New Delhi.

First Year Engineering: Semester II
PROFESSIONAL COMMUNICATION - II

Teaching scheme:
Lectures: 1 Hr
Practical: 2 Hrs

Examination scheme:
Term Work: 25 Marks

Unit 1: Developing Writing Skills (3)

1. Importance of advanced technical writing
2. Report Writing:
 - a) Importance and Techniques of Report Writing
 - b) Methods of data collection and its utilization
 - c) Types of Report Writing- Survey, Inspection and Investigation

Unit 2: Behavioral Skills (4)

1. Understanding Self
2. Attitude Building/ Developing Positive attitude
3. Decision Making Skills
4. Leadership Skills
5. Emotional Intelligence
6. Problem Solving Skills (case study)
7. Stress Management and Time Management
8. Team Work

Unit 3: Presentation Skills (3)

1. Importance & techniques
2. Presenting yourself professionally
3. Public speaking

Unit 4: Career skills (4)

1. Corporate Manners and Etiquettes
2. Planning and Managing Career
3. Job Application and Resume
4. Interview :Techniques & skills
5. Group Discussion
6. Debate

Term Work: Any 8 out of the following should be conducted

1. Group Discussion (lab session/class room activity)
2. Mock Interview
3. Report Writing (lab session/class room activity)
4. Paragraph writing on current technical writing
5. Presentation on current affairs
6. Developing Professional Telephonic skills
7. Exercise of Application writing and Resume writing
8. Practice of Case Study
9. Team building activities
10. Report writing (3 types)
11. Introduction and use of modern communication techniques
12. Computer aided presentation of a project report (PPT)

Instructions:

1. Minimum 8 assignments should be covered.
2. Use of language lab is mandatory for both the semesters.

Reference Books:

1. Handbook for Technical Writing by David A. McMurrey, Joanne Buckley, Cengage.
2. A Course in English by J.D. O'Connor.
3. Better English Pronunciation by J.D. O'Connor.
4. Communication Skills Handbook: How to succeed in written and oral communication by Jane Summers, Brette Smith, Wiley India Pvt.Ltd.
5. Personal Development for Life and Work by Masters, Wallace, Cengage.
6. Soft Skills for Managers by Dr. T. Kalyana Chakravarthi, Dr. T. Latha Chakravarthi, Biztantra.
7. Soft Skills for every one by Jeff Butterfield, Cengage.
8. Behavioural Science by Dr. Abha Singh, Wiley India Pvt.Ltd.
9. An Introduction to Professional English and Soft Skills by Bikram K. Das, Kalyani Samantray, Cambridge University Press New Delhi.
10. Speaking Accurately, K.C. Nambiar, Cambridge University Press New Delhi.
11. Speaking Effectively by Jeremy Comfort, Pamela Rogerson, Cambridge University Press New Delhi.
12. Cambridge English for Job Hunting by Colm Downes, Cambridge University Press New Delhi.
13. Body Language by Allen Pease.
14. The Ace of Soft Skills by Gopalswami Ramesh, Mahadevan Ramesh, Pearson Publication, Delhi.
15. Decision Making Skills by Khanka S.S.
16. Business Ethics and Communication by C.S. Tejpal Sheth.
17. Write Right by Syed Abdur Raheem.

**Equivalence of Subject of F. E. Part I under the
Faculty of Engineering & Technology**
(Effective from July 2013)

SEMESTER I: PHYSICS GROUP

Sr. No.	F.E. Part I Pre-revised	F.E. Part I Revised
1.	Engineering Physics	Engineering Physics
2.	Engineering Mathematics-I	Engineering Mathematics-I
3.	Applied Mechanics	Applied Mechanics
4.	Engineering Graphics	Engineering Graphics
5.	Basic Electronics & Computer Programming in "C"	Fundamentals of Electronics & Computer
6.	Professional Communication - I (Term Work only)	Professional Communication – I (Term Work only)
7.	Workshop Practice-I (Term work only)	Workshop Practice-I (Term work only)

SEMESTER I: CHEMISTRY GROUP

Sr. No.	F.E. Part I Pre-revised	F.E. Part I Revised
1.	Engineering Chemistry	Engineering Chemistry
2.	Engineering Mathematics-I	Engineering Mathematics-I
3.	Applied Mechanics	Applied Mechanics
4.	Engineering Graphics	Engineering Graphics
5.	Basic Electronics & Computer Programming	Fundamentals of Electronics & Computer
6.	Professional Communication - I (Term Work only)	Professional Communication – I (Term Work only)
7.	Workshop Practice-I (Term work only)	Workshop Practice-I (Term work only)

Equivalence of Subject of F.E.Part II under the

Faculty of Engineering & Technology

(Effective from July-2013)

SEMESTER II: PHYSICS GROUP

Sr. No.	F.E. Part I Pre-revised	F.E. Part I Revised
1.	Engineering Physics	Engineering Physics
2.	Engineering Mathematics-II	Engineering Mathematics-II
3.	Basic Electrical Engineering	Basic Electrical Engineering
4.	Basic Civil Engineering	Basic Civil Engineering
5.	Basic Mechanical Engineering	Basic Mechanical Engineering
6.	Professional Communication - II (Term Work only)	Professional Communication – I (Term Work only)
7.	Workshop Practice-II (Term work only)	Workshop Practice-I (Term work only)

SEMESTER II: CHEMISTRY GROUP

Sr. No.	F.E. Part II Pre-revised	F.E. Part II Revised
1.	Engineering Chemistry	Engineering Chemistry
2.	Engineering Mathematics-II	Engineering Mathematics-II
3.	Basic Civil Engineering	Basic Civil Engineering
4.	Basic Mechanical Engineering	Basic Mechanical Engineering
5.	Basic Electrical Engineering	Basic Electrical Engineering
6.	Professional Communication - II (Term Work only)	Professional Communication - II (Term Work only)
7.	Workshop Practice-II (Term work only)	Workshop Practice-II (Term work only)