INSTITUTE OF ENGINEERING,
JIWAJI UNIVERSITY , GWALIOR
B.E. FIRST YEAR SCHEME
(COMMON FOR ALL BRANCH)

Institute Of Engineering, Jiwaji University , Gwalior
B.E. II Sem . (Computer Science Engineering)
B.E. I Sem . (Electronics & Chemical Engineering)
Scheme (w.e.f.2018-2022batch)
Subject wise distribution of marks and corresponding credits

S.NO	Subject Code	Subject Name & Title	Theory Slot			Practical Slot			Total Marks	Credit alloted Subjectwise Period per week			Total Credits
			End Sem	Mid Sem	Total -1	Sessional	Practical	Total-II	T1+T2	L	T	P	C
1	BE-101	Engg. Chemistry	80	20	100	50	50	100	200	3	1	2	6
2	BE-102	Engg. Mathematics	80	20	100	–	–	–	100	3	1	0	4
3	BE-103	Communication Skills	80	20	100	50	50	100	200	3	1	2	6
4	BE-104	Basic Electrical Engg.	80	20	100	50	50	100	200	3	1	2	6
5	BE-105	Engg.Graphics	80	20	100	50	50	100	200	3	1	2	6
6	BE-106	Workshop Practice	–	–	–	50	50	100	100	0	0	4	4
		Total	**400**	**100**	**500**	**250**	**250**	500	1000	**15**	**5**	**12**	**32**

L: Lecture - T: Tutorial - P: Practical

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Engineering Chemistry	**BE-101**

UNIT – I

Water Analysis & Treatment : Source, impurities; hardness and its units, industrial water requirement, characteristics, softening of water by various methods (L.S., zeolite, ion exchange resin) boiler trouble (carry over, scale and sludge, caustic embrittlement). Boiler corrosion causes, effect & remedies, internal treatments to boiler feed water, characteristic of municipal water & its treatment, water analysis (determination of alkalinity, temporary and permanent hardness by complexometry, D.O., B.O.D., C.O.D., chlorides, sulphates, dissolved CO_2 & residual chlorine, T.D.S.) numeric problems based on water analysis and water softening processes.

UNIT – II

Fuels and Combustion : fossil fuels & classification, calorific value & its determination by Bomb Calorimeter & its numerical, proximate and ultimate analysis data, Rankin of solid fuel, carbonization manufacturing of coke & recovery of by product petrochemicals derived from alkenes alkenes, benzene & its homologues. Cracking of higher hydrocarbon & mechanism of cracking, Knocking, relationship between knocking and structure of hydrocarbon, improvement of anti knocking characteristics of IC engine fuels, Diesel engine fuels, octane number, fuel gas analysis, combustic and it related numerical problems.

UNIT – III

Lubricants : introduction, mechanism of lubrication, classification of lubricant, lubricating oils, grease and semisolid lubricant, solid lubricant, synthetic lubricant, properties and testing of lubricating oils (viscosity & viscosity index, flash and fire points, cloud and pour point,

Aniline value steam emulsion number, neutralization No., specification value, Iodine value, Carbon residue) numerical problems based on viscosity index.

* At coal and the signification, calorific value computation based at utilization analysis data.

UNIT – IV

Polymer (Fibers, Rubbers & Elastomers, Plastic) Introduction, Classification, type of polymerization, reaction mechanism, fibers cellulose & synthetic Nylon, Deco ran, polyvinyl, Isolation from latex, Vulcanisation & its mechanism cis-trans rubber Elastomers - Styrene rubber (GR-S) and nitrile rubber (GR-A) Neoprene, Butyle rubber, Thicols, Polyurethanes:

Plastic: Classification, thermoplastic & thermosetting plastics, manufacturing of polythene, PVC, PVA, polyacrylates, acrylonitrils, phenol formaldehyde resins, urea formaldehyde resin & glyptals, silicone resin & its flow sheet diagrams.

UNIT – V

Cement and Refractories : Classification of cement, I.S.I. specification, composition and manufacture of Portland cements, setting & hardening of lime mortor, plaster of Paris, magnesium oxy chloride, Decay of cements.

Refractories : Definition, classification, properties & uses of silica bricks, fire clay, dolomite, magnetite, carborundum, chromites bricks.

UNIT – VI

Instrumental techniques in chemical analysis: Introduction, Infrared, Ultraviolet, NMR spectorophotometery, Gas chromatography, colorimetry, Lamberts and Beer's law.

PRACTICAL :

1 **Water Testing :**

(i) Determination of total hardness by complex metric, titration method.

(ii) Determination of mixed alkalinity (a) OH^- & CO_3^- (b) $CO3^-$ (c) $CO3^-$ & $H\,CO_3^-$

(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

(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

(d) Carbon residue

(iv) Stream emulsification No. & aniline point determination

(v) Cloud's 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 anthracitic acid as internal indicator.

(ii) Determination of Cu and or Cr in alloys by Iodometric titration.

SUGGESTED FURTHER READINGS :

1 Kuriacose & Rajaram – Chemistry in Engineering & Technology – Vol.II

2 S.S.Dara – A text book of Engineering Chemistry

3 Gopalan Venkappaya – Engineering Chemistry

4 B.K. Sharma - Engineering Chemistry

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

BE-102 (ENGG. MATHEMATICS)

Unit I

DIFFERENTIAL CALCULUS :

Expansion of functions by Maclaurin's and Taylor's theorem. Partial differentiation, Euler's theorem and its application in approximation and errors, Maxima and Minima of function of two variables, Curvature : Radius of curvature, centre of curvature.

Unit II

INTEGRAL CALCULUS

Definite Integrals : Definite Integrals as a limit of a sum , its application in Summation of series, Beta and Gamma Functions , Double and Triple Integrals, Change of Order of Integration, Area,Volume and Surfaces using double and triple Integral.

Unit III

DIFFERENTIAL EQUATIONS :

Solution of Ordinary Differential Equation of first order and first degree for Exact differential Equations, Solution of Ordinary Differential Equation of first order and higher degree (solvable for p, x and y, Clairauts Equation), Linear Differential Equations with Constant Coefficients, Cauchy's Homogeneous differential Equation, Simultaneous differential Equations, Method of Variation of Parameters

Unit IV

MATRICES :

Rank, Solution of Simultaneous equation by elementary transformation, Consistency of System of Simultaneous Linear Equation, Eigen Values and Eigen Vectors, Cayley-Hamilton Theorem and its Application to find the inverse

Unit V

Algebra of Logic, Boolean Algebra, Principle of Duality, Basic Theorems, Boolean Expressions and Functions. Elementary Concept of Fuzzy Logic Graph Theory : Graphs, Subgraphs, Degree and Distance, Tree, cycles and Network,

References:

(i) Advance Engg. Mathematics. By Ramana, Tata McGraw hill.
(ii) Higher Engineering Mathematics by BS Grewal, Khanna Publication
(iii) Advance Engineering Mathematics by D.G.Guffy
(iv) Engineering Mathematics by S S Sastri. P.H.I.
(v) Mathematics for Engineers by S.Arumungam, SCITECH Publuication
(vi) Advanced Engineering Mathematics by Erwin Kreyszig, Wiley India

SUGGESTED FURTHER READINGS :

1 Gorakhprasad – Differential calculus
2 B.S. Grawal – Higher Engineering Mathematics
3 A.R. Vashishta & H.K. Sharma – Integral calculus
4 Thakur & Shrivastava – Booleam algebra

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Communication Skill	BE-103

UNIT – I

Languages as Skill of Communication: Linguistic Techniques, Modern usage and style comprehension skill, English phonetic symbols/signs, Oral Presentation – Audition.

UNIT – II

Application of Linguistic Ability : Writing of definitions of engineering terms, Objects, processes and principles (Listening) Topics of General Interest, Reproduction from business, daily life, travel, health buying & selling, company structure, systems etc.

UNIT – III

Letter Writing : Application, Enquiry, Calling quotations, Tenders, Order and complaint.

UNIT – IV

Precise Writing, Noting and drafting, Technical descriptions of simple engineering objects and processes (Writing) Report writing, Precise writing, note writing, slogan writing comment, speech advertising.

UNIT – V

Writing technical reports of the type of observation report, Survey report, Report of trouble, Laboratory report and project report on the subjects of engineering (speaking) Vocabulary, presentation, Demonstration, Conversation – Telephone media, Socializing, Cultural events, Debates, Speech.

SUGGESTED FURTHER READINGS :

1 Krishna Mohan, Prentice Hall India – Business correspondence and report writing

2 W. Stannard Allen, Longmans – Living English Structure

3 Dev Willys Collin (Harper) – Student's Grammer

4 R.K.Bansal & I.B. Harrison (Orient Longman) – Spoken English for India

5 Joans and Alexande (OUP) – New International Business English

6 David P. Harris (McGraw Hill Pub.) – Testing English as a Second Language

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Basic Electrical Engineering	BE-104

UNIT – I

AC Circuits : Review of I phase as circuits under sinusoidal steady state. Active, reactive and apparent power, power factor, 3-phase AC circuits, star and delta connection, 3-phase source and load. Analysis of balanced and unbalanced system. Power in 3-phase circuits and their measurements.

UNIT – II

Magnetic Circuits : Review of laws of electromagnetism. Flux, mmf and their relation, Analysis of magnetic and electric circuits. Saturation, B-H curves, fringing and leakage. AC excitation in magnetic circuits. Induced voltage, Hysteresis effect and eddy currents.

UNIT – III

Transformers : Single – phase transformer, Basic concepts and construction features, types of transformers. Voltage, current and impedance transformation. Equivalent circuits. Per unit system, voltage regulating, losses and efficiency. Testing of transformers Autotransformers.

UNIT – IV

Semi Conductor Electronics : Method of element emmition, application formation of PN Junction condition in PN Junction effect of temp., construction and char. Junction diode, Zener diode, Tunnel diode, Photo diode and varature.

UNIT – V

Transistor : PNP 2 NPN current in transistor char. In diff char. (CB, CE, CC) 22H Parameters and application.Transistor as amplifier, Method of biasing. Voltage 2 current gain. Types of feed blue FET amplifier. Introduction to SCR, DIAC, TRIAC and other power semiconductor devices.

References:

1. Vincent Del Toro, Electrical Engineering Fundamentals, PHI Learning, II Edition
2. S.Ghosh, Fundamentals of Electrical and Electronics Engineering, PHI, II Edition.
3. Millman, Halkias & Parikh, Integrated Electronics, Mc Graw Hill, II Edition
4. Nagrath & Kothari, Basic Electrical Engineering, III Edition TMH.
5. J.S. Katre, Basic Electronics Engg, Max Pub. Pune.
6. Hughes, Electrical and Electronic Technology, Pearson Education IX Edition

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Engineering Graphics	BE-105

UNIT – I

Scales : Representive fraction, plain scales, diagonal scale, scale of chords.

Conic Section : construction of ellipse, parabola and hyperbola by different method and logarithmic spirals.

UNIT – II

Projection of point and line, true inclinations and true length of straight lines, traces of straight lines, auxiliary planes.

UNIT – III

Projection of plains and solid: Projection of plains, projection of polyhedra pyramids, cylinder, cone and sphere.

UNIT – IV

Section of Solid: Section of right solid by normal and inclined planes.

Development of Surfaces: parallel line and radial line method for right solid method of triangulation for oblique pyramids, cones and transition pieces.

UNIT – V

Intersection of surfaces: Intersection of prisms, pyramids, cylinder, cone, by line method, and cutting plane method.

Isometric projection: isometric scale, isometric axes, and isometric projections of planes and solids.

References

1. Visvesvaraya Tech. University; A Premier on Computer Aided Engg drawing; VTU Belgaum
2. Bhatt N.D.; Engineering Drawing, Charotar
3. Venugopal K.;Engineering Graphics; New Age
4. John KC; Engg. Graphics for Degree; PHI.
5. Gill P.S.; Engineering Drawing; kataria
6. Jeyopoovan T.; Engineering drawing & Graphics Using AutoCAD; Vikas
7. Agrawal and Agrawal; Engineering Drawing;TMH
8. Shah MB and Rana BC; Engg.drawing; Pearson Education
9. Luzadder WJ and Duff JM; Fundamental of Engg Drawing; PHI
10 Jolhe DA; Engg. Drawing an Introduction; TMH
11 Narayana K.L.; Engineering Drawing; Scitech

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Workshop Practice	**BE-106**

UNIT - I

Materials of Construction : Classification of engineering materials, composition mechanical properties and uses of cast iron, mild steel, high carbon steel and high speed steel.

UNIT– II

Measurement and Measuring Tools : construction, care and uses of surface plate, straight edge, vernier caliper, micrometer, dial gauge, sine bar and combination set.

UNIT – III

Machine Tools : Description, definition, and specification of m/c tools, working, classification and specification of lathe and drilling machine.

UNIT – IV

Carpentry Shop : Timber, type, qualities of timber, disease, timber plants, structure of timber, timber seasoning, timber preservation, approximate conversion and market forms of timber.

Wood Working Tools : Wood working machinery and joints and joinery, various operations of planning using various carpentry planes swaging and marking of various carpentry joints.Two job's to cover above course such as: name plate, carpentry joints such as cross halving, joints dove tell joint etc., Devilling plates, Wall bracket.

UNIT - V

Fitting Shop : Metal bench work, measuring instruments, engineer steel rule, surface gauges caliper (jenny caliper), height gauges, feeler gauges, try square and micrometer use, care maintains of hand tool such as banner, cold of different type, centre punch, hack saw, dot punch, drift, different type of files, file cuts, file grades, use of surface plate, surface gauges, type of drills, taps dies for drilling tapping and screw threads.

Fitting Operation : clipping filling, drilling and trapping.

Two joints of cover above course such as:

Preparation of job piece by making use of filling, sawing and chipping operation.

- Job having combined practice for drilling and tapping.
- Job having combined practice for drilling and reaming.

One composite job related to advance fitting covering knowledge about allowances and limits, fits and tolerances, use and care of important precision tools used in fitting.

UNIT -VI

Pattern Making : students are required to prepare four jobs related to pattern making and molding and know about: pattern material, pattern allowances and type of pattern, core box, core points, color codes, use and care of tools used for making wooden pattern.

Molding : properties of good molding & core sand composition of green sand, dry sand, and loan sand.

Methods used to prepare simple green and bench & pit mould dry san bench mould using single piece & split pattern.

Care and use of molding tools :

Foundry Practice : Introduction, pattern, pattern material like wood, metals, plastic etc. types of pattern like solid, split, match plate, gated and sweep pattern allowances, mould materials, properties of good molding sand, composition of green sand, dry sand loam sand, types of mould gating system, core, core materials, properties of good core material, core preparation.

UNIT – VII

Welding: students are required to prepare four jobs related to Brazing, soldering welding and to know about:

Equipments used for brazing & gas arc welding, selection of material and fluxed used in brazing and soldering, selection of welding rods, flux and pipe for gas welding.

Use of tools and equipments, safety precautions, welding practice:

(a) **Gas Welding:** method of preparation and accumulation of oxygen and acetylene, equipments used in high pressure and low-pressure gas welding plant. Function of flux, types of gas flames.

(b) **Arc Welding:** various method of producing arc, arc welding equipments, comparison between AC & DC welding, arc welding electrodes, flux coating on welding electrodes.

Suggested Further Readings :

(1) Chapman – Manufacturing processes Vol-I, Vol-II

(2) P.N. Rao – Production technology

(3) Hazra Choudhary – Workshop Practices Vol-I, Vol-II

Institute Of Engineering, Jiwaji University , Gwalior
B.E. I Sem . (Computer Science Engineering)
B.E. II Sem . (Electronics & Chemical Engineering)
Scheme (w.e.f.2018-2022batch)
Subject wise distribution of marks and corresponding credits

S.NO.	Subject Code	Subject Name & Title	Theory Slot			Practical Slot			Total Marks	Credit alloted Subjectwise			Total Credits
										Period per week			
			End Sem	Mid Sem	Total -1	Sessional	Practical	Total-II	T1+T2	L	T	P	C
1	BE-201	Engg. Physics	80	20	100	50	50	100	200	3	1	2	6
2	BE-202	Basic Mechanics	80	20	100	50	50	100	200	3	1	2	6
3	BE-203	Basic Mechanical Engg.	80	20	100	50	50	100	200	3	1	2	6
4	BE-204	Basic Civil Engg.	80	20	100	50	50	100	200	3	1	2	6
5	BE-205	Energy , Ecology , Environment & Society	80	20	100	–	–	–	100	3	1	–	4
6	BE-206	Basic Computer Engg.	–	–	–	50	50	100	100	0	0	4	4
		Total	**400**	**150**	**500**	**250**	**250**	500	1000	**15**	**5**	**12**	**32**

L: Lecture - T: Tutorial - P: Practical

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Engineering Physics	BE-201

UNIT - I

Quantum Physics : matter waves and its experimental verification, wave group and particle velocity their relations. Uncertainty principle with elementary proof and application microscope & single slit. Characteristics and continuous X – ray. Duan limits, Moseley's law, Bragg's equation, Laws of diffraction Bragg's spectrum Compton effect. Electron reflection, Bethe's law, electron gun, working application of CRT & CRO viz measurement of voltage, frequency and phase etc. Bain bridge mass spectrograph & electron microscope.

UNIT – II

Ray & Wave Optics : Cardinal point of co-axial lens system. Nodal slide experiment. Identify spherical & chromatic aberration, coma, astigmatism and distortion ramsden & Huygen's eyepieces and their cardinal points, Fresnel's biprism, Newton's ring and Michelson's interferometer experiments. Diffraction at single slit Double slit and diffraction grating. Concept of polarized light, brewsrer's laws, Double reflection, Nicol prism, Quarter & half wave plate. Idea about circularly & elliptically polarized light, Ray light criteria, RP of telescope, Microscope, Grating and Prism.

UNIT – III

Nuclear Physics : Static properties and applications of nuclear models: Gammow, liquid and shell models, linear particle accelerator, cyclotron, synchrotron, synchrocyclotron & betatron, differential cross section, chain reaction, critical size, nuclear fusion & fission nuclear reactors, its sight select and working, Giger – Muller counter, mass spectrographs, idea of cosmic rays.

UNIT – IV

Digital Electronics : Number system used in digital electronics: decimal, Binary, Octal, Hexadecimal, Conversion of decimal to binary, octal & hexadecimal, and vice versa, addition, subtraction, multiplication, division floating points, numbers, signed and unsigned numbers 2's & 1's compliment, Boolean algebra AND, OR, NOT, NOR, NAND, EX-NOR, EX-OR gates & their representation, truth table, laws of Boolean algebra, DE-morgan theorem, De-morganization conversion of logic circuit from one type to universal logic gates circuits.

UNIT – V

Dielectrics : Dielectric constant, moment of charge distribution, potential and field due to dipole. Torque & force on a dipole in an external field. Works done in rotating a dipole. Dielectric polarization, polar & non – polar dielectric. Gauss's law, E,P & D vectors, different type of polarization. Concept of internal fields. Clausius – Mossotti relationship. Langevin theory of dipolar orientation. Ideal & loss dielectrics. Loss tangent & idea of complex permitivity.

Laser & Fiber Optics : stimulated & spontaneous emission, active medium, population inversion pumping, optical resonators, properties of laser beam, principal of ruby, Nd: YAG, He – Ne & carbon dioxide lasers & their engineering uses and application. Fundamental idea about optical fiber, types of fibers, acceptance angle & cone, numerical aperture, V-number, Propagation of light through fiber (Ray theory), pulse dispersion, attenuation, losses & various uses.

SUGGESTED FURTHER READINGS :

(1) Brij lal & Subhraminyan – A text book of Optics
(2) Brij lal & Subhraminyan – Atomic & Nuclear physics
(3) S. H. Patel – Elements of modern physics
(4) A. Beiser - Concepts of modern physics
(5) P.G. KSHIRSAGAR- Engg. Phy.
(6) S.L. Gupta-Concepts of Morden Physics
(7) Malnino- Leech- Digital Electronics.

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Engineering Mechanics	BE-202

UNIT- I

Statics : Concurrent, Non concurrent and parallel force in plane, Composition resolution of force, free body diagrams, moment of a force and varignons theorem, condition of equilibrium, polygon of forces and funicular of forces, principal of virtual work.

UNIT - II

Trusses: analysis of forces in the members of a truss, method of joints, method of section, graphical method for perfect trusses.

UNIT - III

Centroid and moment of Inertia: location of Centroid and moment of Inertia of plane bodies, Parallel of perpendicular axis theorem, product of inertia, principal moment of solid bodies.

Shear force and bending moment diagram in cantilever, simply supported beam and overhanging beam with concentrated load distributed load and couple, point of contrafluxer, relationship between bending moment and shear force pure bending.

Unit – IV

Friction : Coulombs law of friction, friction on inclined planes, screw and nut friction, ladder and wedge friction, friction in journal collar bearing, uniform pressure and uniform wear, lifting machines.

Unit – V

Transmission of Power : Transmission of power through belt, rope and gear, ratio and tension on tight side and slack side, centrifugal tension, spur, bevel, worm gearing, rack and pinion gear, gear trains, epicyclic gear train.

References :

1. Global Positioning System Principles and application- Gopi, TMH
2. R.C. Hibbler – Engineering Mechanics: Statics & Dynamics.
3. A. Boresi & Schmidt- Engineering Mechines- statics dynamics, Thomson' Books
4. R.K. Rajput, Engineering Mechanics S.Chand & Co.

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Basic Mechanical Engineering	**BE-203**

UNIT - I

Introduction to thermo dynamics: heat and work, I & II law of thermodynamics, carnot cycle and efficiency of heat engines.

UNIT – II

Steam : Sensible heat, latent heat, internal heat, enthalpy, dryness, fraction and determination, steam process at constant pressure, constant volume and constant enthalpy.

UNIT – III

Boilers : Name and function of principle parts, classification, boiler mountings and accessories, draught – natural and artificial, height of chimney, equivalent evaporation and boiler performance.

UNIT – IV

Steam Engines : Description and working, hypothetical and actual indicator diagram, diagram factor, HP developed and efficiency e.g. Mechanical efficiency, brake thermal efficiency and indicated thermal efficiency, governing, cut off and throttle, compound engines (description and working only).

UNIT – V

IC Engines : description and working of four stroke petrol engines, four stroke diesel engine and two stroke diesel engine, petrol engine & relative merits and demerits.

References:

1. Narula; Material Science; TMH
2. Agrawal B & CM; Basic Mechanical Engg. Wiley India
3. Nag PK, Tripathi et al; Basic Mechanical Engg; TMH
4. Rajput; Basic Mechanical Engg;
5. Sawhney GS; Fundamentals of Mechanical Engg; PHI
6. Nakra and Chaudhary; Instrumentation & measurement; TMH
7. Nag PK; Engineering Thermodynamics; TMH
8. Ganesan; Combustion Engines; TMH

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Basic Civil Engineering	BE-204

UNIT - I

Engineering Materials : Stones, Bricks, Timber, Cement, Cement concrete, Concrete proportioning, mixing, curing, properties, tests & uses.

UNIT – II

Elements of building construction, planning with respect to orientation, Foundation, footings, grillage and arch foundations, pile foundation, foundation on black cotton soil.

UNIT – III

Building Construction : Super structure – stone and brick masonry walls, plastering and pointing, floors, roofs, doors, windows, lintels, staircases – type and their suitability, Dampness and its prevention, cost effective construction techniques in mass housing schemes.

UNIT – IV

Introduction to surveying, instruments used in chaining, plane table and related device.

Measurements of distances – conventional and EDM method, measurement of directions by different method, measurements of elevations by different method.

UNIT – V

Mapping details and contouring, measurements of areas, volumes, application of measurements in quantity computation, introduction of remote sensing and its applications.

Reference Books:

1. S. Ramamrutam & R.Narayanan; Basic Civil Engineering, Dhanpat Rai Pub.
2. Prasad I.B., Applied Mechanics, Khanna Publication.
3. Punmia, B.C., Surveying, Standard book depot.
4. Shesha Prakash and Mogaveer; Elements of Civil Engg & Engg. Mechanics;
5. S.P,Timoshenko, Mechanics of stricture, East West press Pvt.Ltd.
6. Surveying by Duggal – Tata McGraw Hill New Delhi.
7. Building Construction by S.C. Rangwala- Charotar publications House, Anand.
8. Building Construction by Grucharan Singh- Standard Book House, New Delhi

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
COURSE CONTENTS

Course Title	Course Code
Energy, Ecology, Environment and Society	BE-205

UNIT – I

Introduction of energy scenario, Conventional resources and non conventional resources of energy, utility and waste management of thermal & Hydal energy, general idea of Solar, Wind, Bio-mass, Geothermal. Tidal and waves of energy . Source and management of nuclear power of energy, Electromagnetic energy, Radio frequency and microwaves. Its biological affects.

UNIT– II

Global warming, depletion of Ozone layer, human activity and meteorology, genetic and plant bio-diversity, El-Nino phenomenon and its effect, solid waste, waste disposal methods, recycling of solid waste and its management.

UNIT– III

Atmosphere – Introduction, structure of the atmosphere. Chemical and photochemical reactions in the atmosphere, primary air pollutants – sources, control and harmful effects of CO_2, NO_2, SO_3, Hydrocarbon particulates, Sampling techniques, Air pollution from Automobiles, Acid rain, some case studies of air pollution.

UNIT – IV

Hydrosphere – Aquatic environment, organic and in organic water pollutants Domestic and Industrial waste water treatment, aerobic and anaerobic treatment process, sampling and preservation, some case studies of water pollution.

UNIT– V

Lithosphere and noise pollution – Introduction of land and soil pollution, control and disposal, harmful effects. General introduction of noise pollution and its effect sound upward from noise changes, Traffic noise, prediction and control.

SUGGESTED READING :

1. McGraw-Hill - Howard Spivey, Rowe - Environmental Engineering
2. Emil T. Channel - Environmental Protection
3. A.K. Day - Environmental Chemistry—Nile Eastern Ltd.
4. Cumin ham, Saigon - Environmental Science—Mc. Gawkily
5. Manual C. Mololler - Ecology Concepts And Application, JR. McGraw-Hill
6. S.S. Dara - Environmental Chemistry & Pollution Control, S. Chand & Co. Ltd.

INSTITUTE OF ENGINEERING, JIWAJI UNIVERSITY, GWALIOR
SEMESTER – II
COURSE CONTENTS

Course Title	Course Code
Computer programming - II	BE-206

UNIT I

Computer: Definition, Classification, Organization i.e. CPU, register, Bus architecture, Instruction set, Memory & Storage Systems, I/O Devices, and System & Application Software. Computer Application in eBusiness, Bio-Informatics, health Care, Remote Sensing & GIS, Meteorology and Climatology, Computer Gaming, Multimedia and Animation etc. Operating System: Definition, Function, Types, Management of File, Process & Memory. Introdcution to MS word, MS powerpoint, MS Excel

UNIT II

Introduction to Algorithms, Complexities and Flowchart, Introduction to Programming, Categories of Programming Languages, Program Design, Programming Paradigms, Characteristics or Concepts of OOP, Procedure Oriented Programming VS object oriented Programming. Introduction to C++: Character Set, Tokens, Precedence and Associativity, Program Structure, Data Types, Variables, Operators, Expressions, Statements and control structures, I/O operations, Array, Functions,

UNIT III

Object & Classes, Scope Resolution Operator, Constructors & Destructors, Friend Functions, Inheritance, Polymorphism, Overloading Functions & Operators, Types of Inheritance, Virtual functions. Introduction to Data Structures.

UNIT IV

Computer Networking: Introduction, Goals, ISO-OSI Model, Functions of Different Layers. Internetworking Concepts, Devices, TCP/IP Model. Introduction to Internet, World Wide Web, E-commerce Computer Security Basics: Introduction to viruses, worms, malware, Trojans, Spyware and Anti-Spyware Software, Different types of attacks like Money Laundering, Information Theft, Cyber Pornography, Email spoofing, Denial of Service (DoS), Cyber Stalking, ,Logic bombs, Hacking Spamming, Cyber Defamation , pharming Security measures Firewall, Computer Ethics & Good Practices, Introduction of Cyber Laws about Internet Fraud, Good Computer Security Habits,

UNIT V

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 Manipulation Languages. Cloud computing: definition, cloud infrastructure, cloud segments or service delivery models (IaaS, PaaS and SaaS), cloud deployment models/ types of cloud (public, private, community and hybrid clouds), Pros and Cons of cloud computing

List of Experiment

01. Study and practice of Internal & External DOS commands.
02. Study and practice of Basic linux Commands – ls, cp, mv, rm, chmod, kill, ps etc.
03. Study and Practice of MS windows – Folder related operations, My-Computer, window explorer, Control Panel,
04. Creation and editing of Text files using MS- word.
05. Creation and operating of spreadsheet using MS-Excel.
06. Creation and editing power-point slides using MS- power point
07. Creation and manipulation of database table using SQL in MS-Access.
08.WAP to illustrate Arithmetic expressions
09. 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
16. WAP to insert and delete and element from the Stack
17. WAP to insert and delete and element from the Queue
18. WAP to insert and delete and element from the Linked List

Recommended Text Books:

1. Fundamentals of Computers : E Balagurusamy, TMH
2. Basic Computer Engineering: Silakari and Shukla, Wiley India
3. Fundamentals of Computers : V Rajaraman, PHI
4. Information Technology Principles and Application: Ajoy Kumar Ray & Tinku Acharya PHI.

Recommended Reference Books:

1. Introduction of Computers : Peter Norton, TMH
2. Object Oriented Programming with C++ :E.Balagurusamy, TMH
3. Object Oriented Programming in C++: Rajesh K.Shukla, Wiley India
4. Concepts in Computing: Kenneth Hoganson, Jones & Bartlett.
5. Operating Systems – Silberschatz and Galvin - Wiley India
6. Computer Networks:Andrew Tananbaum, PHI
7. Data Base Management Systems, Korth, TMH 8. Cloud Computing, Kumar, Wiley India