

BSH-111	Credits	L	T	P
	4	3	1	0

BSH 111 - PROFESSIONAL COMMUNICATION IN ENGLISH

UNIT-I Business Communication : Some key concepts

Meaning and process of communication, Types, channels, Medium of Communication, Barriers of communications, Professional communication; types and principles.

UNIT-II Business Letters

Elements and layout of a business letter, Application, enquiries, calling quotation, sending quotation, orders complains and adjustment.

UNIT-III Report writing

Technical reports; essentials, characteristics and structure. Observation report survey report, trouble report, project report.

UNIT-IV Reading comprehension

Developing comprehension skill through reading of passanges, summarizing, precis writing etc.

UNIT-V Speaking

The process of speaking. Various phonetory oranges. Introduction to phonetics, classification of pure English sounds. Relation between sound, symbol and alphabet.

Suggested Books and References :

1. D'Souza Evnice and Shahani, G; "Communication Skills in English" Noble Publishing House.
2. Fiske, John, "Introduction to Communication Studies" Rotledge London.
3. Sharma, R.C. and Mohan,, K "Buisness Corres, Pondence and Report Writting", Tata Magraw Hill, New Delhi.
4. Gartside, "Model Business Letter", Pitman London, 1992.
5. Chhabra, Dr. T.N., "Professional Communication, Sun India Publications,New Delhi.

BSH-112	Credits	L	T	P
	4	3	1	0

BSH 112 - CHEMISTRY – I

[Total 42 h]

Unit – I: Chemical Bonding and Transition Metals **8h**

VSEPR theory, Valence Bond Theory and Molecular Orbital Theory. Structures of coordination compounds corresponding to coordination numbers up to 6. Geometrical and optical isomerism.

Unit – II: Structure and Reactivity of Organic Molecules **8h**

Inductive effect, hyper conjugation, resonance and steric hindrance. Carbocation, carbanion and Free Radicals. Basic concept of nucleophilic & electrophilic-addition, elimination and substitution reactions. Mechanisms of the reactions viz., Aldol condensation, Cannizzaro reaction, Perkin Reaction, Beckmann Rearrangement and Hoffmann rearrangement.

Unit – III: Reaction Dynamics & Electrochemistry **8h**

Thermodynamics of chemical process: Concept of entropy, Chemical potential and equilibrium, Dynamics of chemical reactions: order of reactions, chain reactions and photochemical reactions. Basic concept of electrochemistry & corrosion.

Unit – IV: Polymers and Stereochemistry **8h**

Basic concepts and types of polymers, mechanism of polymerisation, vulcanisation, natural rubber, Nylon-6, Nylon-6.6., PVC, PET, PS, PE. Stereoregularity in polymers. Conformational analysis (acyclic and cyclic molecules), geometrical and optical isomerism; E, Z and R, S nomenclature.

Unit – V: Spectroscopy and Chromatography **10h**

Theory and application of UV-visible, Infrared and ¹H NMR spectroscopy in organic compounds. Woodward-Fieser rule for calculating λ_{max} . Basic concept and application of TLC and column chromatography.

Books recommended:

1. Kalsi, P.S.; "Stereochemistry conformation and Mechanism", New Age Int. (P), Ltd. New Delhi, 1997.
2. Puri, B. R.; Sharma, L. R. And Pathania, M. S. "Principals of Physical Chemistry", Shoban Lal Nagin Chand & Co.
3. Mukherji, S. M. And Singh, S. P., "Reaction Mechanism in Organic Chemistry" Macmillan India Ltd., New Delhi 2007.
4. Alberty R.A. and Silbey R. J., "Physical Chemistry", John Wiley & Sons, Inc., Singapore, 1996.
5. Cotton F.A., Wilkinson G. and Gaus P.L., "Basic Inorganic Chemistry", John Wiley & Sons, Inc., Singapore, 3rd Ed., 1996.
6. Graham-Solomon T.W., "Fundamentals of Organic Chemistry", John Wiley & Sons, Inc., Singapore, 1997.
7. Odian T.W., "Principles of Polymerization", John Wiley & Sons, Inc., New York, 1981.
8. Sykes P., "A Guidebook to Mechanism of Organic Chemistry", Longman Inc., New York, 1981.
9. Dye J.R. r, "Application of absorption Spectroscopy of Organic Compounds", Prentice Hall of India, 1965.
10. Williams D.H. and Fleming I., "Spectroscopic Methods in Organic Chemistry", Tata McGraw Hill Edition, New Delhi, 4th Ed., 1988.
11. Atkins P.W., "Physical Chemistry", Oxford Univ. Press, 4th Ed., 1990.
12. Morrison R.T. and Boyd R.N., "Organic Chemistry", Prentice Hall of India, 6th Ed., 1992.
13. Rao C.N.R. and Agarwala U. C., "Experiments in General Chemistry", East-West Press, New Delhi, 1969.

ME-113	Credits	L	T	P
	4	3	1	0

ME 113 - ENGINEERING MECHANICS

UNIT-I

Force, classification of force, laws of the forces, equilibrium, moment, varignon's theorem, parallel force, couple, General case of equilibrium and their problems.

UNIT-II

Trusses – Analysis by methods of joints and methods of sections. Frames – Analysis of frames, difference between truss & frames.

UNIT-III

Friction, law of friction, General problems on friction, wedge friction, Belt friction, Ratio of tension of belt, power transmitted by a belt, Condition of maximum power transmission by belt.

Screw friction – Expression for maximum efficiency of a screw jack, and its problems.

Simple lifting machine – Velocity Ratio, Mechanical Advantage, Efficiency, reversibility of a machine, wheel and axle, pulley system & its types, single purchase & double purchase winch crab.

UNIT- IV

Centroid and centre of gravity, Methods & procedure of finding C.G by method of moments and method of integration for various geometrical areas.

Moment of Inertia – various theorems on M.I, Radius of gyration, polar M.I, Centroidal axis, Area moment of inertia, product of Inertia & their problems, Introduction of mass moment of inertia.

UNIT-V

Dynamics of body, D 'Alembert's principle, rectilinear motion, work and energy, impulse & momentum and principles of conservation of momentum, collision of elastic bodies.

Recommend Text Books

1. Engineering Mechanics – Beer Johnson, TNH publisher
2. Engineering Mechanics – K.L. Kumar, TMH publisher.
3. Engineering Mechanics - Mokashi, TMH, Publisher
4. Engineering Mechanics – Timoshenko & Young, East West publisher
5. Engineering Mechanics - Irvin Shames, PHI publisher
6. Engineering Mechanics – A.K. Tayal . Umesh publication

CSE-114	Credits	L	T	P
	4	3	1	0

CSE 114 - INTRODUCTION TO COMPUTER PROGRAMMING

Unit I : Hardware Organization of computer

Introduction of computer, Evolution , types of computer , block diagram of computer , internal architecture of CPU, I/O units (keyboard, monitor, printers etc.) computer memory : primary and secondary memory, cache memory and virtual memory.

Unit II : Data Representation and system software

Number system, conversion of one number system to another number system. Software, classification of software (application and system software), concept of operating system such as DOS, UNIX, WINDOWS, function of Operating system. Compiler , Interpreter, Assembler and Device drivers.

Unit III : Introduction to Programming Language

Introduction to software development, Algorithms and its characteristics, Flow chart : symbols, rules for drawing flow charts, decision tables. Origin of C : data type, constants, variables, operators and expressions, operator precedence and associativity rules, header and library files of C.

Unit IV : Decision making and control statements in C.

Decision making and branching : simple if statement, if else statement, nested if---else statements, switch statements. unconditional statements : break , continue, goto . Looping : for loop, Do While loop, While loop. Application to simple problems of general nature.

Unit V : Function and Arrays in C.

Function and its pros and cons, function prototype, calling a function, actual and formal arguments ,parameter passing techniques , returning values from function. Arrays: one dimensional and two dimensional arrays. Overview of pointers. Introduction of object oriented programming methodology.

Reference Books:

1. Computer fundamentals by P.K.Sinha
2. Computer fundamentals by B.Ram
3. Fundamentals of Computers by V.Rajaraman
4. Programming in C By E. Balagurusamy
5. Programming in C by Byron Gottfrid.

BSH-115	Credits	L	T	P
	4	3	1	0

BSH-115: MATHEMATICS-I

Differential Calculus

Unit-1 Successive Differentiation Leibnitz Theorem, Roll's Theorem, Lagrange's Mean value Theorem, Expansion of functions by Maclaurian and Taylor's series. Tangents and Normal's, Maxima and minima of one van able.

Unit-II Indeterminate forms, Asymptotes, Radius of curvature, Partial differentiation, Total differentiation.

Integral Calculus

Unit-III Reduction formulae, Curve Tracing, Length, Area, Surface volume, Theorem of Pappas or Guldin. Gamma function, Beta function.

Differential Equations

Unit-IV Differential Equations of first order and its applications, Linear equation of second order, Simultaneous differential equation.

Unit-V Partial differential equation of first order, Linear homogenous partial differential equation, Application of partial differential equation.

Books Recommended :

- 1-Differential Calculus by Gorakh Prasad.
- 2-Integral Calculus by Gorakh Prasad.
- 3-Diffrential Equation by P.N. Chattrjee.
- 4-Engineering Mathematics by Bali & Iyengar.
- 5- Engineering Mathematics by H.K. Das.
- 6-Higher Engineering Mathematics by B.S. Grewal.

BSH-116	Credits	L	T	P
	2	0	0	3

BSH 116 – ENGINEERING CHEMISTRY LAB

1. To determine the Normality and Strength (g/L) of given KMnO_4 solution titrating against standard (N/30) Mohr's salt solution
2. To determine the Normality and Strength (g/L) of given Ferrous Ammonium Sulphate solution 'A' using standard Ferrous Ammonium Sulphate (N/30) solution 'B' taking KMnO_4 solution as an intermediate.
3. To determine the concentration of hypo solution ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) iodometrically titration with given Iodine (N/50) solution
4. To prepare the Urea Formaldehyde resin and calculate the yield.
5. To prepare the Aspirin and calculate the yield.
6. Study of Bomb Calorimeter
7. Study of Cleveland's Apparatus
8. Find out the Total hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator.
9. Find out the Permanent hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator
10. Find out the Temporary hardness of given water sample using 0.01M EDTA solution, buffer solution (pH-10) and EBT as an indicator.
11. Determination of dissolved oxygen in the given sample water
12. To determine chloride ion in a given water sample by Argentometric method (Mohr's method)

ME-117	Credits	L	T	P
	2	0	0	3

ME 117 - ENGINEERING MECHANICS LAB

1. Verification of Law of Parallelogram of force.
2. Verification of law of triangle of forces.
3. Verification of law of polygon of forces.
4. Verification of law of moment.
5. Practical verification of forces in the member of nib crane.
6. Practical verification of forces in the member of roof truss.
7. Determination of coefficient of friction between two given surface.
8. Determination of coefficient of wheel and axle.
9. Determination of coefficient of single purchase winch crab.
10. Determination of coefficient of double purchase winch crab.
11. Determination of coefficient of simple screw jack.

ME-118	Credits	L	T	P
	2	0	0	3

ME-118 ENGINEERING DRAWING

UNIT- I CONVENTIONAL LINES, DRAWING SHEETS – THEIR LAYOUT & PLANNING

Technical lettering – Introduction, single stroke letters, capital and lower letters
Scales – Introduction, Representative fraction, construction of scales, Types- plain & diagonal scale.

Cycloid curve- Cycloid, Epicycloids & Hypocycloid, Involute to a plain curve.

Spiral curve – Archimedean spiral and logarithmic spiral.

UNIT- II Projection of points

Concept of quadrant system, first angle and third angle projection, projection of point in all quadrants. General procedure to draw projection of points on HP & VP.
Projection of lines – Different situation of lines in spaces.

UNIT- III

Theory of orthographic projection & projection of planes.

UNIT –IV

Projection of solids & section of solids

UNIT – V

Development of Surfaces & Isometric Projection

Recommended Text Book

1. Fundamental of Engineering Drawing – Luzzadar & Dulf, PHI
2. Engineering Drawing – N.D. Bhatt, Charottar Publishing House
3. Engineering Drawing – Arshad Siddiquee, Zahid Khan & Ahmed , PHI
4. Engineering Drawing – P.S. Gill, S.K. Kataria & Sons publishers.