Bhagat Phool Singh Mahila Vishwavidyalaya, Haryana
B.E./B.Tech CSE Sem 2 syllabus

English

CODE: HSMC-101
English
CREDITS: 2

UNIT-1

Module 1: Vocabulary Building
1.1 The concept of Word Formation 1.2 Root words from foreign languages and their use in English 1.3 Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives. 1.4 Synonyms, antonyms, and standard abbreviations.

Module2: Basic Writing Skills
2.1 Sentence Structures 2.2 Use of phrases and clauses in sentences 2.3 Importance of proper punctuation 2.4 Creating coherence 2.5 Organizing principles of paragraphs in documents 2.6 Techniques for writing precisely

UNIT-2
Module 3: Identifying Common Errors in Writing
3.1 Subject-verb agreement 3.2 Noun-pronoun agreement 3.3 Misplaced modifiers 3.4 Articles 3.5 Prepositions 3.6 Redundancies 3.7 Clichés

UNIT-3
Module 4: Nature and Style of sensible Writing
4.1 Describing 4.2 Defining 4.3 Classifying 4.4 Providing examples or evidence 4.5 Writing introduction and conclusion

UNIT-4

Module 5: Writing Practices

5.1 Comprehension 5.2 Précis Writing 5.3 Essay Writing

Module 6: Oral Communication
(This unit involves interactive practice sessions in Language Lab)

- Listening Comprehension
- Pronunciation. Intonation. Stress and Rhythm
- Common Everyday Situations: Conversations and Dialogues
- Communication at Workplace
- Interviews
- Formal Presentations

Suggested Readings:
(i) Practical English Usage. Michael Swan. OUP. 1995.
(ii) Remedial English Grammar. F.T. Wood. Macmillan.2007
(iii) On Writing Well. William Zinsser. Harper Resource Book, 2001
(iv) Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006.
(v) Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011.
(vi) Exercises in Spoken English. Parts. 1-111. CIEFL, Hyderabad. Oxford University Press.

MATHEMATICS 2

Code: BSc-104
Mathematics-II: probability and statistics
Credits : 4

Basis of statistics
Unit 1
Module 1: basic probability:
Probability spaces, conditional probability, independence; discrete random variables, independent random variables, the multi normal distribution, poison approximation to the binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables: expectation of discrete random variables, moments, variance of a sum, correlation coefficient, chebyshev's inequality.

Unit 2
Module 2: continuous probability distributions:
Continuous random variables and their properties, distribution functions and densities, normal exponential and gamma densities.

Module 3: bivariate distributions:
Bivariate distributions and their properties, distribution of sums and quotients, conditional densities, Bayes; rule.

Unit 3
Module 4: basic statistics:
Measures of Central tendency: moments, skewness and kurtosis- probability distributions: binomial, poison and normal- evaluation of statistical parameters for these three distributions, correlation and regression- rank correlation.

Module 5: applied statistics:
Curve fitting by the method of least squares- fitting of straight lines, second degree parabola and more general curves.

Unit 4
Applied statistics: test of significance: large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations.

Module 6: small samples:
Test for single mean, difference of means and correlation coefficients, test for ratio of variances- chi square test for goodness of fit and independence of attributes

Suggested text/reference books

1) Erwin Kreyszig, advanced engineering mathematics, 9th edition, John wiley and sons 2006.
2) P.G. Hotel, S.C. Port and C.J. Stone, introduction to probability theory, universal Book stall, 2003
3) S. Ross. A first course in probability, 6 th edition , Pearson education India, 2002.
4) W.Feller, an introduction to probability theory and its application, vol I, third edition wiley, 1968.
5) N.P. Bali and Manish Goyal, a textbook of engineering mathematics, Lakshmi publications,
6) B.S. Grewal, higher engineering mathematics, Khanna publishers, 35th edition 2000.
7) Veerarjan T.. Engineering mathematics (4 semester III), Tata mcgraw hill, New Delhi

Programming for Problem Solving

Unit – I

Introduction to Programming (4 lectures)

Introduction to components of a computer system (disks, memory. processor, where a program is stored and executed operating system, compilers etc.) - (I lecture). Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/ Pseudocode with examples. (1 lecture) From algorithms to programs: source code, variables (with data types) variables and memory locations. Syntax and Logical Errors in compilation. object and executable code lectures) Arithmetic expressions and precedence (2 lectures)

Unit - 2

Conditional Branching and Loops (6 lectures)

Writing and evaluation of conditionals and consequent branching a lectures) Iteration and loops (3 lectures).

Unit - 3

Arrays (6 lectures)

Arrays (1-D, 2-D). Character arrays and Strings

Unit - 4

Basic Algorithms (6 lectures)

Searching. Basic Sorting Algorithms (Bubble, Insertion and Selection). Finding roots of equations. Notion of order of complexity through example programs (no formal definition required)

Unit - 5

Function (5 lectures)

Functions (including using built in libraries). Parameter passing in functions, call by value. Passing arrays to functions: idea of call by reference

Unit - 6

Recursion (4-5 lectures)

Recursion, as a different way of solving problems. Example programs such as Finding Factorial. Fibonacci series. Ackerman function etc. Quick sort or Merge sort.

Unit - 7

Structure (4 lectures)

Structures. Defining structures and Array of Structures Pointers (2 Lectures) idea of pointers. Defining pointers. Use of pointers I self-referential structures, notion of linked list (no implementation)

Unit - 8

File handling (only if time is available, otherwise should be done as part of the lab)

Suggested Text Books:

(i) Byron Gottfried, Schaum's Outline Programming with , McGrawHill

(ii) E. Balalguruswamy, Programming in ANSI C, Tata McGraw-Hill

References:

Brian W.Kernighan and Dennis M.Ritchie The C Programming Language, Prentice Hall of India

Chemistry I

Module 1: Atomic and molecular structure (12 lectures)

Schrodinger equation, particle in a box solutions and their applications for conjugated molecules and nanoparticles. Forms of the hydrogen atom wave functions and the plots of these function of and nano particles. Forms fo the hydrogen atom wave functions and the plots of these functions to explore their spatial variations. Molecular orbitals of diatomic molecules and plots of the multicenter orbitals. Equations for atomic and molecular orbitals. Energy level diagrams of diatomic. Pi-molecular orbitals of butadiene and benzene and aromaticity. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties. Band

structure of solids and the role

Module 2: Spectroscopic techniques and applications (8 lectures)

Principles of spectroscopy and selection rules. Electronic spectroscopy. Fluorescence and its applications in medicine. Vibrational and rotational spectroscopy diatomic molecules Applications. Nuclear magnetic resonance and magnetic resonance imaging, surface characterisation techniques. Diffraction and scattering.

Module 3: Intermolecular forces and potential energy surfaces (4 lectures)

Ionic, dipolar and van Der Waals interactions. Equations of state of real gases and critical phenomena. Potential energy surfaces of' H3, H2F and HCN and trajectories on these surfaces.

Module 4: Use of free energy in chemical equilibria (6 lectures)

Thermodynamic functions: energy, entropy and free energy. Estimations of entropy and free energies. Free energy and emf. Cell potentials. The Nernst equation and applications. Acid base, oxidation reduction and solubility equilibria. Water chemistry. Corrosion. Use of free energy considerations in metallurgy through Ellingham diagrams.

Module 5: Periodic properties (4 Lectures)

Effective nuclear charge. penetration of orbitals, variations of s. p. d and f orbital energies of atoms in the periodic table, electronic configurations, atomic and ionic sizes, ionization energies. electron affinity and electronegativity. polarizability. oxidation states, coordination numbers and geometries, hard soft acids and bases, molecular geometries.

Module 6: Stereochemistry (4)

Representations of 3 dimensional structures, structural isomers and stereoisomers. Configurations and symmetry and chirality, enantiomers. diastreomers, optical activity, absolute configurations android conformational analysis. Isomerism in transitional metal compounds

Module 7: Organic reactions and synthesis of a drug molecule

(4 lectures)

Introduction to reactions involving substitution, addition, elimination, oxidation, reduction. cyclization and ring openings. Synthesis of a commonly used drug molecule.

Suggested Text Books

(1) University chemistry. by B. H. Mahan

(ii) Chemistry: Principles and Applications, by M. J. Sienko and R. A. Plane

cili fundamentals of Molecular Spectroscopy. by C. N. Banwell

(iv)Engineering Chemistry (NPTEL Web-book). by B. L. Tembe, Kamaluddin and M. S.Krishnan

(v) Physical Chemistry, by P. W. Atkins (vi) Organic Chemistry: Structure and Function byK. P. C. Volhardt and N. E. Schore, 5th Editionhttp://bcs.whfrecmån.com/vollhardischoreSc/default.asp