Kavayitri Bahinabai Chaudhari North Maharashtra University, Maharashtra B.E./B.Tech IT Sem 2 syllabus

Engineering Graphics

Engineering Graphics

Semester credits 03

Unit–I:

Introduction To Engineering Graphics:-
A) Principles of Engineering Graphics and their significance, usage of Drawing Instruments and Supporting Material, Letters and Numbers as per BIS : SP46-2003, Scale (Plane , Diagonal & Vernier scale)
B) Curves and Conic Section draw ellipse by directrix and arc of circle method. draw parabola by directrix and rectangle method . draw hyperbola by rectangle and directrix method.Cycloid, Epicycloid, Hypocycloid and Involute.

Unit–II:
A) PROJECTIONS OF STRAIGHT LINES:- Principle of Orthographic Projections,-, Projections of Points, Projection of Line, Lines inclined to both the Planes,

B) PROJECTIONS OF PLANES:- Projection of different simple shapes e.g. Circle, Triangle, Rectangle, Pentagon and Hexagon on principle plane (Inclined to one plane and to both planes).

Unit–III:
A) Projection of simple solid.
Projection of Prism, Pyramid, Cone, Cylinder and Cube with their axis inclined to one reference plane and parallel to other Projection of Prism, Pyramid, Cone, Cylinder and Cube with their axis inclined to one reference plane and parallel to other
B) Development of solid surfaces e.g. Prism, Cylinder, Cone, Pyramid

and Cubes

Unit–IV:
A) Orthographic projections of different machine parts problem on first angle &Third Angle.
B) Types of sections and Conversion of pictorial view into sectional orthographic views

Unit–V:

ISOMETRIC PROJECTIONS
Introduction, Isometric axes, lines and planes, true scale and isometric scale. Isometric projection and Isometric view Conversion of given orthographic view into isometric projection.

Text Books:
1. Venugopal K and Prabhu Raja V(2015), “Engineering Graphics”, New AGE International Publishers,.
2. Narayana,K.L& P Kannaiah(2008),Text book on “Engineering Drawing. SciTech Publication.
Reference Books:
1. N.D. Bhat and V.M. Panchal, Engineering Graphics, Charotar Publishers 2013
2. Agrawal B &Agrawal B.C (2008) Engineering Graphics, TMH Publication.

English

English

Semester credits 3

Unit–I:

1. Introduction to Phonetics
1.1 Vowel Sounds
1.2 Consonant Sounds
1.3 Diphthongs
1.4 Intonation

Unit–II:

2. 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–III:

3. Identifying Common Errors in Writing
3.1 Subject-verb agreement
3.2 Noun-pronoun agreement
3.3 Tenses
3.4 Articles
3.5 Prepositions
3.6 Primary Auxiliary Verbs
3.7 Modal Auxiliary Verbs

Unit–IV:

4. Nature and Style of sensible Writing
4.1 Describing
4.2 Defining
4.3 Classifying
4.4 Job Application
4.5 Résumé, Curriculum Vitae & Bio-Data

Unit–V:

5. Reading Comprehension
5.1 Skimming
5.2 Scanning
5.3 Intensive
5.4 Extensive

Text Book
1. Raymond Murrphy, Essential English Grammar, Cambridge University Press, 2nd edition
2. Rajinder Pal & PremLata , English Grammar&Composition, Sultan chand Publication

Reference Books:
1. Michael Swan, Practical English Usage. OUP. 1995.
2. F.T. Wood. Macmillan Remedial English Grammar..2007
3. William Zinsser, On Writing Well.. Harper Resource Book. 2001

4. Hamp-Lyons and Ben Heasly, Study Writing. Liz Cambridge University Press. 2006.
5. Sanjay Kumar and PushpLata, Communication Skills, Oxford University Press. 2011.
6. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

Mathematics –II

MATHEMATICS-II

Unit–I:

First order ordinary differential equations:
Exact equations, Integrating Factor, Equations reducible to exact , linear and Bernoulli‟s equations, Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut‟s type.

Unit–II:

Linear Differential Equations with constant coefficients: Linear differential equations with constant coefficients ,Method to find Perticular Integral by shortcut methos, method of variation of parameters, Cauchy-Euler equation. Legendres Equations.

Unit–III:

Function of Complex Variable :
Differentiation, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Cauchy Integral formula (without proof), Cauchy Residue theorem(without proof)

Unit–IV:

Numerical methods:-Solution of Ordinary differential equations: by Taylor‟s series and Picard‟s Method. Runge-Kutta method of fourth order for solving first order equations.
Numerical integration: Trapezoidal rule and Simpson‟s 1/3rd and 3/8 rules.

Unit–V:

Multivariable Calculus (Integration):
Double integrals (limits Given and limits not given) by Cartesian and Polar coordinates. Triple integration by spherical polar coordinates. Applications: areas and volumes.

Text Books :
1. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
2. H.K.DASS “Advance Engineering Mathematics” S. Chand publications.
3. Ravish R. Singh, Mukul Bhatt “Engineering Mathematics A Tutorial Approach.Tata McGrawHill Education Private Limited. New Delhi

Reference Books:
1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
3. W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 9th Edn., Wiley India, 2009.
4. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.
5. E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall India,1995.

6. J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., Mc-GrawHill, 2004.

7. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010

Chemistry

Chemistry

Semester credits 04

Unit–I:

Atomic and molecular structure
Schrodinger equations, Schrodinger equation. Particle in a box solutions and their applications for conjugated molecules and nanoparticles, Molecular orbitals of diatomic molecules and plots of the multicentre orbitals. Equations for atomic and molecular orbitals. Energy level diagrams of diatomics. 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 of doping on band structures.

Unit–II:

Spectroscopic techniques and applications

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

Unit–III:

Periodic properties
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,

Unit–IV:

Intermolecular forces and potential energy surfaces.
Ionic, dipolar and van Der Waals interactions. Equations of state of real gases and critical Phenomenon . Potential energy surfaces of H3, H2F and HCN.
Use of free energy in chemical equilibria
Thermodynamic functions: definitions - energy, entropy and free energy. Estimations of entropy and free energies. Free energy and e.m.f. Cell potentials, the Nernst equation and applications.

Unit–V:

Stereochemistry.
Isomerism, structural isomers and stereoisomers, configurations and symmetry and chirality, enantiomers,
diastereomers, optical activity, absolute configurations (R and S Configuration with Ex.) and conformational analysis.(Staggered and eclipsed Conformation of Ethane)
Organic reactions and synthesis of a drug molecule
Introduction to reactions involving substitution, addition, elimination,

oxidation, reduction, Synthesis of a commonly used drug molecule.(Aspirin and Paracetamol)

Text Books

1.Tembe, Kamaluddin and Krishnan,,Engineering Chemistry, (NPTEL Web-book)

Reference Books:

1. B. H. Mahan University chemistry, Pearsons Publication, 4th edition
2. M. J. Sienko and R. A. Plane, Chemistry: Principles and Applications,
3. C. N. Banwell, Fundamentals of Molecular Spectroscopy,Mcgraw Higher Ed., 4th edition.
4. P. W. Atkins, Physical Chemistry, Oxford University Press, 7th edition.
5. J. D. Lee Concise Inorganic Chemistry ,Oxford University Press, 5 th edition
6. Puri,Sharma, Kalia, Principles of Inorganic Chemistry