Haryana Engineering College, Jagadhri

Lesson Plan of Applied Sciences Deptt. 2nd Semester

Subject : Chemistry (BS-101A)

Objective of Course :

To familiarize the students with basic and applied concept in chemistry

Day	Topic / Chapter Covered	Academic Activity	Test/Assignment
Day 1	Atomic and molecular structure	Lecture	
Day 2	Molecular orbitals of diatomic molecules (N_2, O_2, CO)	Lecture	
Day 3	Equations for atomic and molecular orbitals	Lecture	
Day 4	Energy level diagrams of diatomics	Lecture	
Day 5	Pi-molecular orbitals of butadiene and benzene and aromaticity	Lecture	
Day 6	Crystal field theory and energy level diagrams of $[Co(NH_3)_6]$	Lecture	
Day 7	$[Ni(CO)_4]$, $[PtCl_2(NH_3)_2]$	Lecture	
Day 8	Magnetic properties of metal complexes	Lecture	Assignment 1
Day 9	Band structure of solids and the role of doping on band structures.	Lecture	
Day10	Spectroscopic techniques and applications	Lecture	
Day11	Principles of spectroscopy and selection rules	Lecture	
Day12	Electronic spectroscopy(basic concept)	Lecture	
Day13	Fluorescence and its applications in medicine	Lecture	
Day14	Vibrational and rotational spectroscopy of diatomic molecules, Applications	Lecture	
Day15	Basic concepts of Nuclear magnetic resonance	Lecture	
Day16	Magnetic resonance imaging	Lecture	
Day17	Diffraction and scattering	Lecture	
Day18	Use of free energy in chemical equilibria	Lecture	Assignment 2
Day19	Thermodynamic functions: energy	Lecture	
Day20	Entropy and free energy	Lecture	
Day21	Estimations of entropy and free energies	Lecture	
Day22	Free energy and emf	Lecture	
Day23	Cell potentials	Lecture	
Day24	The Nernst equation and	Lecture	

	applications.		
Day25	Periodic properties	Lecture	
Day26	Effective nuclear charge	Lecture	
Day27	Penetration of orbitals	Lecture	Assignment 3
Day28	Variations of s, p, d and f orbital energies of atoms in the periodic table	Lecture	
Day29	Electronic configurations	Lecture	
Day30	Atomic and ionic sizes	Lecture	
Day31	Ionization energies, electron affinity	Lecture	
Day32	Electronegativity	Lecture	
Day33	Polarizability, oxidation states	Lecture	
Day34	Coordination numbers and geometries	Lecture	
Day35	Hard soft acids and bases	Lecture	Assignment 4
Day36	Molecular geometries (H_2O, NH_3, PCl_5, SF_6, CCl4, $Pt(NH_3)_2Cl_2$	Lecture	
Day37	Stereochemistry	Lecture	
Day38	Representations of 3 dimensional structures	Lecture	
Day39	Structural isomers and stereoisomers	Lecture	
Day40	Configurations and symmetry and chirality	Lecture	
Day41	Enantiomers, diastereomers	Lecture	
Day42	Optical activity	Lecture	
Day43	Absolute configurations and conformational analysis.	Lecture	Assignment 5
Day44	Organic reactions and synthesis of a drug molecule	Lecture	
Day45	Introduction to reactions involving substitution, addition	Lecture	
Day46	Elimination, oxidation, reduction	Lecture	
Day47	Cyclization and ring openings	Lecture	
Day48	Synthesis of a commonly used drug molecule(paracetamol and Aspirin)	Lecture	

(Sign. of HOD) (Sign. of Teacher Concerned with date)

Haryana Engineering College, Jagadhri

Lesson Plan of Applied Sciences Deptt. 2nd Semester

Subject : English (HM-101A)

Objective of Course :

1. Building up the vocabulary
2. Students will acquire basic proficiency in English including writing skills

Day	Topic / Chapter Covered	Academic Activity	Test/Assignment
Day 1	Vocabulary Building	Lecture	
Day 2	The concept of Word Formation	Lecture	
Day 3	Root words from foreign languages	Lecture	
Day 4	Their use in English	Lecture	Assignment 1
Day 5	Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives.	Lecture	
Day 6	Synonyms	Lecture	
Day 7	Antonyms	Lecture	
Day 8	Standard abbreviations	Lecture	Assignment 2
Day 9	Basic Writing Skills	Lecture	
Day10	Sentence Structures	Lecture	
Day11	Use of phrases and clauses in sentences	Lecture	
Day12	Importance of proper punctuation	Lecture	
Day13	Creating coherence	Lecture	Assignment 3
Day14	Organizing principles of paragraphs in documents	Lecture	
Day15	Techniques for writing precisely	Lecture	
Day16	Identifying Common Errors in Writing	Lecture	
Day17	Subject-verb agreement	Lecture	
Day18	Noun-pronoun agreement	Lecture	Assignment 4
Day19	Misplaced modifiers	Lecture	
Day20	Articles	Lecture	
Day21	Prepositions	Lecture	
Day22	Redundancies	Lecture	
Day23	Clichés	Lecture	Assignment 5
Day24	Nature and Style of sensible Writing	Lecture	
Day25	Describing	Lecture	
Day26	Defining	Lecture	
Day27	Classifying	Lecture	Assignment 6
Day28	Providing examples or evidence	Lecture	
Day29	Writing introduction and conclusion	Lecture	Assignment 7
Day30	Comprehension	Lecture	

Day31	Précis Writing	Lecture	
Day32	Essay Writing	Lecture	

(Sign. of HOD) (Sign. of Teacher Concerned with date)

Haryana Engineering College, Jagadhri

Lesson Plan of Applied Sciences Deptt. 2nd Semester

Subject : Probability & Statistics (BS-134A)

Objective of Course :

1. Probability theory provides models of probability distributions(theoretical models of the observable reality involving chance effects) to be tested by statistical methods which has various engineering applications, for instance, in testing materials, control of production processes, robotics, and automatization in general, production planning and so on.
2. To develop the essential tool of statistics in a comprehensive manner.
3. To familiarize the student with the problem of discussing universe of which they in which complete enumeration is impractical, tests of significance plays a vital role in their hypothesis testing.

Day	Topic / Chapter Covered	Academic Activity	Test/Assignment
Day 1	Basic Probability: Introduction	Lecture	
Day 2	Additive law of probability	Lecture	
Day 3	Conditional Probability	Lecture	
Day 4	Independent Events	Lecture	Assignment 1
Day 5	Bayes' Theorem.	Lecture	
Day 6	Random Variables: Discrete random variables	Lecture	
Day 7	Probability distribution	Lecture	
Day 8	Probability mass function and distribution function	Lecture	
Day 9	Expectation	Lecture	
Day10	Moments	Lecture	
Day11	Variance and standard deviation of discrete random variables.	Lecture	
Day12	Continuous Probability distribution: Continuous random variables	Lecture	
Day13	Probability distribution	Lecture	Assignment 2
Day14	Probability density function	Lecture	
Day15	Distribution function	Lecture	
Day16	Expectation	Lecture	
Day17	Moments	Lecture	
Day18	Variance and standard deviation of Continuous random variables.	Lecture	
Day19	Probability distributions: Binomial	Lecture	
Day20	Poisson and Normal - evaluation of statistical parameters for these three distributions.	Lecture	
Day21	Basic Statistics	Lecture	
Day22	Measures of Central tendency	Lecture	

Day23	Mean, median	Lecture	Assignment 3
Day24	Quartiles, mode	Lecture	
Day25	Geometric mean, Harmonic mean	Lecture	
Day26	Measures of dispersion: Range	Lecture	
Day27	Quartile deviation	Lecture	
Day28	Mean deviation, standard deviation	Lecture	
Day29	Coefficient of variation, Moments	Lecture	
Day30	Skewness and Kurtosis	Lecture	
Day31	Correlation, Coefficient of correlation	Lecture	
Day32	Methods of calculations	Lecture	
Day33	Lines of regression	Lecture	
Day34	Rank correlation.	Lecture	
Day35	Applied Statistics: Curve fitting by the method of least squares: Introduction	Lecture	Assignment 4
Day36	Fitting of a straight line	Lecture	
Day37	Fitting of second degree curve, fitting of a polynomial of degree m	Lecture	
Day38	Fitting of a geometric or power curve of the form $y = ax^b$	Lecture	
Day39	Fitting of an exponential curve of the form $y = ab^x$.	Lecture	
Day40	Test of significance: Basic terminology	Lecture	
Day41	Large sample test for single proportion	Lecture	
Day42	Difference of proportions	Lecture	
Day43	Single mean, difference of means	Lecture	Assignment 5
Day44	Small samples test for single mean, difference of means	Lecture	
Day45	Chi-square test for goodness of fit	Lecture	

(Sign. of HOD) (Sign. of Teacher Concerned with date)

Haryana Engineering College, Jagadhri

Lesson Plan of Applied Sciences Deptt. 2nd Semester

Subject : Basic Electrical Engineering (ES-101A)

Objective of Course :

To familiarize the students with the basic of Electrical Engineering.

Day	Topic / Chapter Covered	Academic Activity	Test/Assignment
Day 1	D.C. circuits: Ohm's Law	Lecture	
Day 2	Junction, node, circuit elements	Lecture	
Day 3	Classification: Linear & nonlinear, active & passive, lumped & distributed, unilateral & bilateral with examples	Lecture	
Day 4	KVL	Lecture	Assignment 1
Day 5	KCL	Lecture	
Day 6	Loop and node-voltage analysis of resistive circuit	Lecture	
Day 7	Star-Delta transformation for resistors	Lecture	
Day 8	Network Theorems: Superposition	Lecture	Assignment 2
Day 9	Thevenin's	Lecture	
Day10	Norton's	Lecture	
Day11	Maximum power transfer theorems in a resistive network.	Lecture	
Day12	AC Fundamentals: Mathematical representation of various wave functions	Lecture	
Day13	Sinusoidal periodic signal	Lecture	
Day14	Instantaneous and peak values	Lecture	
Day15	Polar & rectangular form of representation of impedances and phasor quantities	Lecture	
Day16	Addition & subtraction of two or more phasor sinusoidal quantities using component resolution method	Lecture	
Day17	RMS and average values of various waveforms	Lecture	
Day18	A.C. Circuits: Behavior of various components fed by A.C. source (steady state response of pureR, pure L, pure C	Lecture	Assignment 3
Day19	RL, RC, RLC series with waveforms of instantaneous voltage, current & power on simultaneous time axis scale and corresponding phasor diagrams)	Lecture	

Day20	Power factor, active, reactive & apparent power	Lecture	
Day21	Frequency response of Series & Parallel RLC ckts.including resonance	Lecture	
Day22	Q factor, cut-off frequency & bandwidth	Lecture	
Day23	Generation of alternating emf.	Lecture	
Day24	Balanced Three Phase Systems: Generation of alternating 3- phase emf	Lecture	
Day25	3-phase balanced circuits	Lecture	
Day26	Voltage and current relations in star and delta connections	Lecture	
Day27	Measurement of 3-phase power by two wattmeter method for various types of star & delta connected balanced loads	Lecture	Assignment 4
Day28	Single Phase Transformer (qualitative analysis only): Concept of magnetic circuits	Lecture	
Day29	Relation between MMF & Reluctance	Lecture	
Day30	Hysteresis & Eddy current phenomenon	Lecture	
Day31	Principle, construction & emf equation	Lecture	
Day32	Phasor diagram at ideal, no load and on load conditions	Lecture	
Day33	Losses & Efficiency, regulation	Lecture	
Day34	OC & SC test, equivalent circuit	Lecture	
Day35	Concept of auto transformer.	Lecture	Assignment 5
Day36	Electrical Machines (qualitative analysis only): Construction and working of dc machine with commutateor action	Lecture	
Day37	Speed control of dc shunt motor	Lecture	
Day38	Generation of rotating magnetic fields	Lecture	
Day39	Construction and working of a three-phase induction motor	Lecture	
Day40	Significance of torque-slip characteristic	Lecture	
Day41	Basics of Single-phase induction motor, capacitor start capacitor run Single-phase induction motor working	Lecture	
Day42	Basic construction and working of synchronous generator and motor.	Lecture	

Day43	Electrical Installations (LT Switchgear): Switch Fuse Unit (SFU)	Lecture	
Day44	MCB, ELCB, MCCB	Lecture	
Day45	Types of Wires and Cables	Lecture	
Day46	Earthing	Lecture	

(Sign. of HOD) (Sign. of Teacher Concerned with date)

Haryana Engineering College, Jagadhri

Lesson Plan of Applied Sciences Deptt. 2nd Semester

Subject : Calculus & Ordinary Differential Equations (BS-136A)

Objective of Course :

To familiarize the prospective engineers with techniques in multivariate integration, ordinary and partial differential equations and complex variables.

Day	Topic / Chapter Covered	Academic Activity	Test/Assignment
Day 1	First order ordinary differential equations: Exact	Lecture	
Day 2	Linear and Bernoulli's equations	Lecture	
Day 3	Euler's equations	Lecture	
Day 4	Equations not of first degree	Lecture	Assignment 1
Day 5	Equations solvable for p	Lecture	
Day 6	Equations solvable for y	Lecture	
Day 7	Equations solvable for x and Clairaut's type.	Lecture	
Day 8	Ordinary differential equations of higher orders	Lecture	Assignment 2
Day 9	Second order linear differential equations with constant coefficients	Lecture	
Day10	Method of variation of parameters	Lecture	
Day11	Cauchy and Legendre's linear differential equations	Lecture	
Day12	Multivariable Calculus (Integration): Multiple Integration	Lecture	
Day13	Double integrals (Cartesian)	Lecture	Assignment 3
Day14	Change of order of integration in double integrals	Lecture	
Day15	Change of variables (Cartesian to polar)	Lecture	
Day16	Applications: areas and volumes	Lecture	
Day17	Triple integrals (Cartesian)	Lecture	
Day18	Orthogonal curvilinear coordinates	Lecture	Assignment 4
Day19	Simple applications involving cubes	Lecture	
Day20	Sphere and rectangular parallelepipeds	Lecture	
Day21	Vector Calculus: Introduction	Lecture	
Day22	Scalar and Vector point functions	Lecture	
Day23	Gradient, divergence	Lecture	Assignment 5
Day24	Curl and their properties	Lecture	
Day25	Directional derivative	Lecture	
Day26	Line integrals	Lecture	
Day27	Surface integrals	Lecture	Assignment 6

Day28	Volume integrals	Lecture	
Day29	Theorems of Green	Lecture	Assignment 7
Day30	Gauss and Stokes (without proof)	Lecture	
Day31	Complex Variable – Differentiation	Lecture	
Day32	Differentiation	Lecture	
Day33	Cauchy-Riemann equations	Lecture	
Day34	Analytic functions	Lecture	
Day35	Harmonic functions	Lecture	Assignment 8
Day36	Finding harmonic conjugate	Lecture	
Day37	Elementary analytic functions (exponential, trigonometric, logarithm) andtheir properties	Lecture	
Day38	Complex Variable – Integration: Contour integrals	Lecture	
Day39	Cauchy-Goursat theorem (without proof)	Lecture	
Day40	Cauchy Integral formula (withoutproof)	Lecture	
Day41	Taylor's series	Lecture	
Day42	Zeros of analytic functions	Lecture	
Day43	Singularities	Lecture	Assignment 9
Day44	Laurent's series	Lecture	
Day45	Residues	Lecture	
Day46	Cauchy Residue theorem (without proof)	Lecture	

(Sign. of HOD) (Sign. of Teacher Concerned with date)