CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING/ INFORMATION TECHNOLOGY

B.E. I – Year

I - Semester

S.No	Code	Subject	L	T	P/D	Credits
		THEORY				
1	EG 111	English - I	2	0	0	2
2	MT 111	Mathematics - I	3	1	0	3
3	PY 111	Engineering Physics - I	3	0	0	3
4	CY 111	Engineering Chemistry - I	3	0	0	3
5	CS 111	Programming and Problem Solving	3	1	0	3
6	CE 112	Environmental Studies	3	1	0	3
7	ME 112N	Engineering Graphics	1	0	3	3
		PRACTICALS				
8	EG112	English Language Laboratory – I	0	0	2	1
9	PY114/ CY114	Engineering Physics Lab – I/ Engineering Chemistry Lab – I	0	0	3	2
10	CS 114	Programming Lab – I	0	0	3	2
11	IT 111	IT Workshop	0	0	3	2
		TOTAL	**18**	**03**	**14**	**27**

EG 111

ENGLISH –I
(common to all branches)

Instruction	2 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	2

Course Objectives:
To enable the students to
➢ To understand the role and importance of communication and to develop their basic communication skills in English.
➢ To enable the students to communicate through listening, speaking, reading and writing.
➢ To achieve a sound foundation and acquaint the students in the basics of grammar.
➢ To develop vocabulary and to use appropriate idiomatic expressions, one word substitutes etc,.
➢ To ensure students use learning materials prescribed, and to inculcate the habit of reading for pleasure.
➢ To enhance imaginative creative and critical thinking through literary texts.
➢ To enable students to write composition and draft different kinds of letters.

Unit-I
Effective Communication: Role and importance of communication, process of communication, types of communication , barriers to communication, Verbal communication and non verbal communication , formal versus informal communication.

Unit-II
Review of Grammar: 1. Tense and aspect 2. Articles 3. Prepositions 4. Voice   5. Concord   6. Direct and indirect speech
Vocabulary Enhancement: 1. Synonyms   2. Antonyms

Unit-III
Reading comprehension and reading strategies.
Lessons Prescribed: 1. Barack Obama: A Trendsetter   2. Rendezvous with Indra Nooyi
Text based exercises
Vocabulary Enhancement: 1. Homonyms   2. Homophones   3. Homographs   4. Words often confused

Unit-IV
Writing Skills: Paragraph writing, Essay writing , Letter of application, Resume writing, Complaint letter with response.
Vocabulary Enhancement: Idiomatic expressions and one word substitutes.

Unit-V
Soft skills - Introduction to soft skills, soft versus hard skills, professional etiquette in formal and semi formal situations, telephonic etiquette, E-mail etiquette.

Text Books:
1. "Essential English"- E Suresh Kumar et al**.** (Orient Balck Swan PVT Ltd.)
2. "Communication Skills and Soft Skills: An Integrated Approach"- E Suresh Kumar et al**. (**Pearson Publications)

Suggested Reading:
1. "English Vocabulary in Use" - Michael McCarthy (Cambridge University Press)
2. "Developing Communication Skills" – Krishna Mohan & Meera Banerjee (Macmillan)
3. "Murphy's English grammar" (Cambridge University Press)
4. "English Phrasal Verbs in use" - Michael McCarthy (Cambridge University Press)
5. "Written Communication in English" –Sarah Freeman (Orient Longman)
6. "Model Business letters, E-Mails and Other Business Documents" - Shirley, Taylor (Pearson) "Effective Technical Communication" – M. Ashraf Rizvi (Tata- McGraw Hill)
7. "Business Correspondence and Report Writing – R.C Sharma and Krishna Mohan (Tata Mc Graw Hill)
8. Soft Skills, Alex , Publishers S. Chand

MT 111

MATHEMATICS-I
(common to all branches except Biotech)

Instruction	3L + 1T Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

UNIT-I: Matrices: Rank of a matrix, Echelon form-Normal form-Consistency of a linear system of equations. Eigen values, Eigen vectors- properties (with out proofs). Cayley- Hamilton Theorem (statement only) inverse and powers of a Matrix by Cayley-Hamilton Theorem. Reduction of Quadratic form to Canonical form by linear transformation, rank, positive, negative, definite, semi-definite, index and signature.

UNIT-II: Sequences and Series: Convergence and divergence, ratio test, Comparison test, integral test, Cauchy's root test, Raabes's test-Alternating series, Absolute and conditional convergence, Leibniz's Test (tests without proofs).

UNIT-III: Differential Calculus:
Mean value theorems (statements only) - Rolle's Theorem, Lagrange's theorem, Cauchy's theorem, and generalized mean value theorem (Taylor's Theorem), Geometrical interpretations. Curvature and Radius of curvature, center of curvature, circle of curvature. Evolutes,involutes and Envelopes. Functional dependence, Jacobian, Taylors series in two variables, Maxima and Minima for function of two variables with and without constraints.

UNIT-IV: Integral Calculus: Curve tracing – Cartesian, polar and parametric curves (standard curves only). Double and triple integrals change of order integration, applications of integration, rectification, areas, volumes and surfaces of solids of revolution in Cartesian and polar coordinates.

UNIT-V: Beta and Gamma Functions: Definitions of Beta and Gamma functions-elementary Properties of both Beta and Gamma functions, Relation between Beta and gamma functions, differentiation under the integral sign. Error function, complementary error function, properties Differentiation of error functions.

Text Books:
1. Advanced Engineering by Kreyszig, john wiley & sons -publishers.
2. Mathematical Methods of science and engineering, Aided with MATLAB,Kanti.B.Datta.Cengage Learning India Pvt.Ltd,418 Pratapgang,New Delhi.
3. Mathematics for Engineers and Scientists by Alen Jaffery , 6th edition 2013 CRC press, Taylor & Francis Group.(Elsavier)
4. Advanced Engineering Mathematics by Michael Greenburg, Second Edition –Pearson Education.

Suggested Reading:
1. Mathematics for Engineers-a modern interactive approach by A.Craft and Robert Davison-Willey
2. Applied Mathematics and physicists by Loius Pipes-Mc Graw Hill pubulishers.
3. Advanced Engineering Mathematics by R.K.Jain & S.R.K.Iyenger, 3rd edition, Narosa Publications
4. Matrices for Engineering Dynamics by AR Collar and A. Simpson-John Willey & sons
5. Essential Mathematics for Engineers by W.Bolton-Betterworth and Heineman
6. Mathematical for Physicists and Engineers- L F Landoviz, Publishers- Rienfold Book Corporation.
7. Higher Engineering Mathematics by B.S.Grewal, Khanna Publishers.
8. Engineering Mathematics by B.V.Ramana
9. Calculus by Smith and Minton
10. Applications of Linear Algebra by David.C Lay

PY 111

ENGINEERING PHYSICS – I
(common to all branches except Chemical & Biotech)

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

Unit – I
Waves and Oscillations: Simple harmonic motion – Differential equation and its solution – Torsional pendulum – Superposition of two mutually perpendicular linear SHMs of same frequency – Lissajous figures – Damped vibrations – Differential equation and its solution – Logarithmic decrement - Relaxation time – Quality factor – Forced vibrations – Differential equation and its solution – Amplitude resonance.

Ultrasonics: Introduction – Production of ultrasonics by piezoelectric and magnetostriction methods – Detection of utrasonics – Determination of ultrasonic velocity in liquids – Engineering applications.

Unit – II
Interference: Introduction – Division of amplitude & division of wavefront – Interference in thin films (reflected light) – Newton's rings – Fresnel's biprism.

Diffraction: Introduction – Distinction between Fresnel and Fraunhoffer diffraction – Diffraction at single slit & double slit – Diffraction grating (N Slits).

Unit – III
Polarization: Introduction – Brewster's law – Malus's law – Double refraction – Nicol's prism – Quarter & Half wave plates – Optical activity – Laurent's half shade polarimeter.

Lasers & Holography: Introduction – Characteristics of lasers – Spontaneous & stimulated emission of radiation – Einstein's coefficients – Population inversion – Ruby laser – He-Ne laser – Semiconductor laser – Applications.

Basic principle of Holography – Recording & Reconstruction of hologram – Applications.

Unit - IV
Electromagnetic Theory: Review of steady and varying fields – Conduction and displacement current – Maxwell's equations in differential and integral forms – Electromagnetic wave propagation in free space, dielectric and conducting media – Poynting theorem.

Fibre Optics: Introduction – Types of optical fibres – Propagation of light through an optical fibre – Acceptance angle – Numerical aperture – Pulse dispersion – Fibre materials – Fibre drawing process by double crucible method – Applications.

Unit – V
Elements of Statistical Mechanics: Introduction – Ensembles – Phase space – Thermodynamical probability – Boltzmann theorem on entropy – Maxwell-Boltzmann, Bose-Einstein & Fermi-Dirac statistics – Photon gas – Planck's' law of black body radiation – Wien's law and Rayleigh-Jean's law from Planck's law.

Text Books:

1. M.N. Avadhanulu and P.G. Kshirsagar, *A Text Book Engineering Physics*, S. Chand Publications, 2014
2. S.L. Gupta and Sanjeev Gupta, *Modern Engineering Physics*, Dhanpat Rai Publications, 2011
3. V. Rajendran, *Engineering Physics*, McGahill Education Publications, 2013

Suggested Reading:

1. R. Murugeshan and Kiruthiga Sivaprasath, *Modern Physics*, S. Chand Publications S. Chand Publications, 2005
2. M. Arumugam, *Materials Science*, Anuradha Publications, 2002.
3. Satyaprakash and Agarwal, *Statistical mechanics*, Kedannath Publications
4. P.K. Palanisamy, *Engineering Physics*, Scitech Publications, 2012
5. Hitendra K Malik and A.K. Singh, *Engineering Physics*, Tata McGahill Education Publications, 2011

CY 111

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ENGINEERING CHEMISTRY - I
(common to all branches except Chemical & Biotech)

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Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

Course Objectives:

The syllabus has sought to fulfill the objective of making the student of engineering and technology realize that chemistry like other subjects is the real base of his profession and that therefore he must have a good understanding of chemistry before he can use it in his profession. The various units of the syllabus is so designed to fulfill the following objectives.

1. Thermodynamics and Electrochemistry units give conceptual knowledge about spontaneous processes and how can they be harnessed for producing electrical energy and efficiency of systems. It also discusses the devices used for electrical energy storage and captive generation and tapping it as and when required.
2. "Those who control materials control technology". Newer materials lead to discovering of technologies in strategic areas like defense and space research. Recently modern materials synthesized find applications in industry and creating instruments for solving problems of electronics, telecommunications, health care, agriculture, and technology etc., Inorder to emphasize the above the topics like composite materials, polymers, conducting polymers and nano materials have been incorporated in the curriculum.
3. Knowledge to prevent corrosion of machinery and metallic materials and water chemistry which require serious attention in view of increasing pollution has been included in the syllabus.
4. Fuels have been taught with a view to give awareness as to materials which can be used as sources of energy and fuel cells which are the alternate energy sources for generating electrical energy on spot and portable applications.
5. To appraise the students about the importance and role of chemistry in the field of Engineering by explaining the relevant topics.
6. To enable students to apply the knowledge acquired in improving the properties of engineering materials.
   The engineer who has the above background can effectively manage the materials in his designing applications and discovering and improving the systems for various uses in industry, agriculture, health care, technology, telecommunications, electronics and instruments detecting in advance in natural calamities. The above knowledge also helps students to carry out inter disciplinary research such that the findings benefit the common man.

UNIT – I
Chemical Thermodynamics – I:
The concept of reversible and irreversible process, Work done in isothermal and adiabatic reversible and irreversible process, Success and limitations of First law of thermodynamics, need for second law of thermodynamics, statements of second law of thermodynamics, Carnot cycle, heat engine and its efficiency, Carnot theorem, numericals.

UNIT – II
Chemical Thermodynamics - II & Phase Rule:
Concept of Entropy – Entropy changes in reversible and irreversible processes, physical significance of entropy, Helmholtz free energy and Gibb's free energy functions, chemical potential, criteria of spontaneity in terms of entropy and Gibb's free energy function, Gibb's – Helmholtz equation and its applications, numericals.
Phase rule – Terminology, phase diagram – one component system (water system).

UNIT – III
Fuels – I:
Classification, requirements of a good fuel, calorific value, types of calorific value, relation between HCV & LCV and numericals. Determination of calorific value by Bomb calorimeter, Dulong's formula, numericals.
Combustion, ignition temperature of fuel, calculation of air quantities by weight and volume required for combustion of fuel, numericals.
Solid fuels: coal and its chemical composition, analysis of coal – proximate and ultimate analysis, importance.

UNIT – IV
High Polymers:

Definition of polymer, degree of polymerization. Thermo plastics and thermo sets. Molecular weight – number average and weight average. Determination of molecular weight of a polymer by viscosity method.

Preparation, properties and uses of plastics (Polyvinyl chloride, Bakelite), fibers (Kevlar, polyurethane), Rubbers – natural rubber and its chemical structure, vulcanization and its significance.

Preparation, properties and uses of silicone rubber, conducting polymers – definition, classification and applications.

UNIT –V
Engineering Materials:

Nano materials – Introduction to nano materials and general applications, basic chemical methods of preparation – Sol-gel and hydrothermal methods. Carbon nanotubes and their applications.

Powder X-ray diffraction- particle size estimation (Scherrers equation)

Composite materials – definition, types of composites, fibre reinforced, glass fibre reinforced and carbon fibre reinforced composites and applications.

Text Books:

1. J.C. Kuriacase & J. Rajaram, "Chemistry in engineering and Technology", Tata McGraw-Hill Pub.Co.Ltd, New Delhi (2008).
2. S.S.Dara & S.S.Umare, "Engineering Chemistry", S.Chand company.
3. ShasiChawla, "Text Book of Engineering Chemistry", Dhantpat Rai Publishing Company,   NewDelhi (2008).
4. P.C.Jain and Monica Jain, "Engineering Chemistry", Dhanpat Rai Pub, Co., New Delhi (2002).
5. Puri & Sharma, "Principles of Physical Chemistry
6. P.R.Vijayasarathi, "Engineering Chemistry" PHI Learning Private Limited, New Delhi (2011).

Suggested Reading:

1. Physical chemistry by P.W.Atkin (ELBS OXFORD PRESS)
2. Physical chemistry by W.J.Moore (Orient Longman)
3. Physical Chemistry by Glasstone
4. Physical Chemistry by T.Engel & Philip Reid, Pearson Publication.
5. Introduction to nano materials by T.Pradeep.

CS 111

PROGRAMMING AND PROBLEM SOLVING
(common to CSE, IT, ECE, EEE & Biotech)

Instruction	3L + 1T Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

Unit-I
Introduction to computers: Hardware Components, Functional block diagram, Operating Systems, Program Development Environments.
Programming languages: System Programming, Application Programming, Low-level, High-level, Classification of Programming languages.
Translators: Compiler, Interpreter, Loader and Linker.
Number Systems: Representation of Binary, Octal and Hexadecimal Numbers, Conversions, Negative Binary Numbers, Fractional Numbers.

Unit-II
Problem solving: Algorithm: Key Features of an Algorithm, Strategy for designing an Algorithm. Tracing an Algorithm to depict logic. Specification for converting algorithms to programs, Flow chart and Pseudo codes.
Introduction to C Programming: Standardizations, Developing Programs In C, Parts and structure of C Program, character set ,Variable, Data types ,Statement, Declaration, Token, Operators and Expressions.

Unit-III
Control Structures: Test Condition for Selection and Iteration, Conditional Execution and Selection, Iteration and Repetitive Execution, Break, Continue and go to statement, Nested Loops.
Functions: Concept of Functions, Types of functions, Parameter passing techniques, Scope and Extent, Storage Classes, Recursion.
Case Studies on Control structures and Functions (Tutorial Purpose only).

Unit-IV:
Arrays: Declaration, Initialization, Accessing Array Elements, Internal Representation and Variable Length Arrays of One-dimensional Array and Multidimensional Arrays, Passing Arrays to Functions, Searching and Sorting.
Pointers: Address Operator (&),Declaring and Initializing Pointers, Indirection Operator and Dereferencing, Pointer Arithmetic, Pointers to Pointers, Array of Pointers, Pointers to Functions, Dynamic Memory Allocation, Command Line Arguments.
Case Studies on Arrays and Pointers (Tutorial Purpose only).

Unit-V:
User-defined Data Types and Variables: Structures , Declaring Structures and Structure Variables, Accessing the members of a Structure , Initialization, Nesting of Structures, Arrays of Structures, Structures and Pointers, Structures and Functions, Union, Enumeration Types.
File Processing: Working with Text and Binary Files, Sequential and Random Access File, Files of Records.
A Case Study on Files (Tutorial Purpose only).

Text Books:
1. Pradip Dey and Manas Ghosh "Programming in C 2/e" Oxford University Press , 2nd Edition 2011.
2. B. W. Kernighan & D.M. Ritchie, "The 'C' Programming Language" Prentice Hall India, 2nd Edition. 1990.
3. R S Bichkar "Programming with C "University Press, 2012.

Suggested Reading:
1. Rajaraman V. "The Fundamentals of Computers" 4th Edition, Prentice Hall of India, 2006.
2. Behrouz A .Forouzan, Richard F.Gilberg "Computer Science : A Structured Programming Approach using C" Cengage Publishers, 2006.

CE 112

ENVIRONMENTAL STUDIES
(common to all branches)

Instruction	3L + 1T Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

Course Objectives:
1. To equip the students with inputs on the environment, natural resources, ecosystems and Bio-diversity.
2. To enable the students become aware of environmental pollutions, causes, effects and control measures.
3. To make the students contribute for capacity building of nation for arresting and/or managing environmental disasters.

UNIT – I

Environmental Studies Definition, Scope and importance, need for public awareness. Natural resources: Water resources, use and over utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Effects of modern agriculture, fertilizer pesticide problems, water logging salinity. Energy resources; growing energy needs, renewable and non-renewable energy sources. Land resources; land as a resource, land degradation, soil erosion and desertification.

UNIT – II

Ecosystems: Concept of an ecosystem, structure and function of an ecosystem, producers, consumers and decomposers, energy flow in ecosystem, food chains, ecological pyramids, aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries).

UNIT – III

Biodiversity: Genetic species and ecosystem diversity, biogeographical classification of India. Value of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity.

UNIT – IV

Environmental Pollution: Cause, effects and control measures of air pollution, water pollution, soil pollutions, noise pollution, thermal pollution and solid waste management. Environment protection act: Air, water, forest & wild life acts, issues involved in enforcement of environmental legislation.

UNIT – V

Social issues and the environment: Water conservation, watershed management, and environmental ethics. Climate change; global warming, acid rain, ozone layer depletion, Environmental protection act, population explosion.
Disaster Management: Types of disasters, impact of disasters on environment, infrastructure and development, Basic principles of disaster mitigation, disaster management, and methodology disaster management cycle and disaster management in India

Text Books:
1. Y. Anjaneyulu, Introduction to Environmental Science, B.S. Publications, 2004
2. S.S.Dara, A Text book of Environmental Chemistry & Pollution Control, S.Chand & Comp. Ltd, 2000.

Suggested Readings:
1. De A.K. *Environmental Chemistry*, Wiley Eastern Ltd., 1989.
2. Odum E.P. *Fundamentals of Ecology,* W.B. Saunders Co., USA, 1975.
3. Rao M.N. and Datta A.K., *Wastewater treatment*, Oxford & IBH publishing Co., 1987.
4. Miller T.G. Jr. Environmental Science, Wordsworth Publishing Co., 1984.
5. Benny Joseph, Environmental Studies, Tata Mc. Graw Hill education Pvt. Ltd., 2000
6. Raman Siva Kumar, Introduction to environmental Science and Engineering, Tata Mc. Graw Hill education Pvt. Ltd., 2010.

ME 112N

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ENGINEERING GRAPHICS
(common to CSE, ECE, EEE and IT)

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Instruction	1L + 3D Periods per week
Duration of Mid term Examination	90 minutes
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

Course Objectives:
1. To provide an exposure in understanding the drawings during a multidisciplinary approach towards a problem
2. To train up in perception and imagination of a three dimensional scenario.

Learning Outcome :

The student should be able to
1. Understand different engineering curves
2. Interpret the principles of visualization in first angle orthographic projection for different objects.
3. Interpret and draw isometric projection of a single engineering component

UNIT-I
Scales: Instruments and their uses, reduced and enlarged scales, representative fraction, types of scales- plain, diagonal and vernier.
Simple Geometric Constructions: Construction of Regular polygons by different methods.
Conic Sections: ellipse, parabola and hyperbola by different methods.

UNIT-II
Projection Of Points And Straight Lines: Orthographic projection, projection of points placed in different quadrants. Projection of straight lines inclined to one and two reference planes.

UNIT-III
Projection of Planes: projection of perpendicular planes, oblique planes.

UNIT-IV
Projection of Solids: polyhedra, solids of revolution, projection of solids with axis inclined to one plane and parallel to another reference plane.

UNIT-V
Isometric Projections: isometric projections and views of prisms, pyramids, cones and cylinders, and combination of two or three solids.

Text Books:
1. N.D.Bhatt," Elementary Engineering Drawing", Charotar Publishers, 2012
2. BasanthAgrawal and C M Agrawal "Engineering Drawing 2ed ", McGraw-Hill Education (India) Pvt. Ltd.

Suggested Reading:
1. K.L.Narayana and P.K.Kannaiah, "Text Book of Engineering Drawing", Scitech Publications, 2011.
2. P.S.Gill" "Engineering Graphics", Kataria Publications, 2011.
3. K.Veenugopal, "Engineering Drawing and Graphics + Autocad", New Age International Pvt.Ltd, 2011.
4. Shaw M.B and Rana B.C., "Engineering drawing", Pearson, 2nd edition, 2009
5. P I Varghees, " Engineering Graphics ",Tata McGraw-Hill publications, 2013
6. Bhattacharya. B, "Engineering Graphics", I. K. International Pvt.Ltd, 2009
7. Dhawan R.K., "Principles of Engineering Graphics and Drawing", S. Chand 2011

EG 112

ENGLISH LANGUAGE LABORATORY – I
(common to all branches)

Instruction	2 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	1

Comuter Assisted Language Learning Lab (CALL)

Introduction:
The language lab focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts.
The following are the **objectives** of the course:
1. To make students recognize the sounds of English through audio – visual aids and computer software.
2. To help them overcome their inhibitions and self consciousness while speaking in English and to build their confidence. The focus shall be on fluency rather than accuracy.
3. To enable them to speak English correctly with focus on stress and intonation.
4. To expose the students to a variety of self instructional, learner friendly modes of communication.

Syllabus:
1. Introduction to English Phonetics: Introduction to auditory, acoustic and articulatory phonetics, organs of speech: the respiratory, articulatory and phonatory systems.
2. Sound system of English: Phonetic sounds and phonemic sounds, introduction to international phonetic alphabet, classification and description of English phonemic sounds, minimal pairs. The syllable : types of syllables, consonant clusters.
3. Aspects of connected speech: Strong forms, weak forms, contracted forms, elision.

Interactive Communication Skills Lab (ICS LAB)

Introduction:

The objective of the course is to enrich interpretation skills, problem solving skills, interpersonal skills, analytical skills and leadership skills of the students, the most essential requirement of communication skills for Engineering students. The course lays emphasis on the language integrated skills in simple and comprehensive manner.
The following are the **objectives** of the course:
1. To expose the students to a team environment and how best one works with teams while adapting themselves to a corporate environment and to make business presentations.
2. Use proper body language expressions in presentation and speeches.
3. Depict situations in the dialogue that are relevant and useful to the learner, retain the truth value in the dialogue.
4. Public speaking is to be shown in action by incorporating narrative examples and extracts from speeches relating directly to students actual life experiences.

Syllabus:

1. Situational dialogues & role plays.
2. Group discussions: Objectives of a GD, types of GD's, initiating, continuing and concluding of GD.
3. Public speaking: Advantages of public speaking, essentials of an effective speech, rehearsal techniques, planning and delivering speeches.

Suggested Reading:

1. E Suresh Kumar et al**. English for Success**(with CD), Cambridge University Press India Pvt Ltd. 2010.
2. T Balasubramanian**. A Textbook of English Phonetics for Indian Students**, Macmillan, 2008.
3. Kavita Tyagi and Padma Misra. **Professional Communication**, PHI Learning Pvt Ltd, 2011
4. J Sethi et al. **A Practical Course in English Pronunciation** (with CD), Prentice Hall India, 2005.
5. Meenakshi Raman and Sangeeta Sharma**. Technical Communication**, Oxford Universuty Press 2009.

PY 114

ENGINEERING PHYSICS LAB - I
(common to all branches except Chemical)

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	2

1. Error Analysis – Estimation of errors in the determination of time period of a torsional pendulum

2. Newton's Rings – Determination of wavelength of given monochromatic source

3. Single Slit Diffraction – Determination of wavelength of given monochromatic source

4. Diffraction Grating – Determination of wavelengths of two yellow lines of mercury light

5. Malus's Law – Verification of Malus's law

6. Double Refraction – Determination of refractive indices of O-ray and E-ray of given calcite crystal

7. Polarimeter – Determination of specific rotation of glucose

8. Laser – Determination of wavelength of given semiconductor red laser

9. Fibre Optics – Determination of NA and power losses of given optical fibre

10. Recording & Reconstruction of Hologram

CY 114

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ENGINEERING CHEMISTRY LAB - I
(common to all branches except Chemical & Biotech)

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Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	2

Course Objectives:

1. To impart fundamental knowledge in handling the equipment/glassware and chemicals in the chemistry laboratory.
2. To offer hands on experience on the basic equipment related to engineering chemistry.
3. For practical understanding of theoretical concepts of chemistry

I. Volumetric Analysis:

1. Introduction to volumetric analysis and Techniques of weighing and usage of analytical balance.
2. Estimation of amount of ferrous ion using $K_2Cr_2O_7$ solution.
3. Estimation of Carbonate and Bicarbonate in the given solution using HCL (Link) Solution

II. Kinetics:
4. Hydrolysis of methyl acetate in acidic medium.

III. Organic Polymers:
5. Preparation of urea – formaldehyde / phenol- formaldehyde resin.

IV. Instrumental Chemical Analysis:
    i) Conductometric Titrations:
6. Strong acid vs strong base.
7. Mixture of strong acid and weak acid vs strong base.

    ii) Colorimetry:
8. Determination of concentration of given $K_2Cr_2O_7$ solution.
9. Determination of concentration of given $KMnO_4$ solution.
10. Determination of viscosity of sample oil by Redwood viscometer.

Text Books:

1. Vogel's text book of quantitative chemical analysis by J.Mendham and Thomas, Person education Pvt.Ltd.New Delhi 6th ed.2002.
2. Senior practical physical chemistry by BD Khosla, A.Ghulati, VC.Garg; R.Chand and CD; NewDelhi 10th edition
3. Laboratory manual in engineering chemistry by S.K.Bhasin and Sudha Rani; Dhanpath Rai Publishing company

CS 114

PROGRAMMING LAB- I
(common to all except Chemical)

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	2

1. Identify the hardware components, assembling of computers.

2. Basic of OS commands, Installation of OS (Linux, DOS and XP).

3. Familiarization of Editors.

4. Sin x and Cos x values using Series expansion.

5. Demonstration of switch case (menu driven).

6. Demonstration of Parameter passing in Functions.

7. Demonstration of Functions using Recursion.

7. Program to count No of lines, characters, blanks, tab and special characters.

8. Demonstration of arrays

   (i) Search-Linear.

   (ii) Sorting-Bubble, Selection.

   (iii) Operations on Matrix.

9. Generation of address labels using structures.

10. Implementation of string manipulation operations with and without library function.

11. Sequential file operations.

12. Random Access File Operations.

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY

INFORMATION TECHNOLOGY
B. E. I – Year

I – Semester

S.No	Code	Subject	L	T	P/D	Credits
		THEORY				
1	EG 111	English - I	2	0	0	2
2	MT 111	Mathematics - I	3	1	0	3
3	PY 111	Engineering Physics - I	3	0	0	3
4	CY 111	Engineering Chemistry - I	3	0	0	3
5	CS 111	Programming and Problem Solving	3	1	0	3
6	CE 112	Environmental Studies	3	1	0	3
7	ME 112N	Engineering Graphics	1	0	3	3
		PRACTICALS				
8	EG112	English Language Laboratory – I	0	0	2	1
9	PY114/ CY114	Engineering Physics Lab – I/ Engineering Chemistry Lab – I	0	0	3	2
10	CS 114	Programming Lab – I	0	0	3	2
11	IT 111	IT Workshop	0	0	3	2
		TOTAL	**18**	**03**	**14**	**27**

II – Semester

S.No	Code	Subject	L	T	P/D	Credits
		THEORY				
1	EG 121	English - II	2	0	0	2
2	MT 121	Mathematics - II	3	1	0	3
3	PY 122	Applied Physics	3	0	0	3
4	CY 121	Engineering Chemistry - II	3	0	0	3
5	CS 121	Object Oriented Programming through C++	3	1	0	3
6	EE 111	Principles of Electrical Engineering	3	1	0	3
7	CE 111	Engineering Mechanics-I	3	1	0	3
		PRACTICALS				
8	EG 122	English Language Laboratory – II	0	0	2	1
9	PY 125 / CY 123	Engineering Physics Lab – II / Engineering Chemistry Lab – II	0	0	3	2
10	CS 122	Programming lab - II	0	0	3	2
11	ME 114	Workshop	0	0	3	2
		TOTAL	**20**	**04**	**11**	**27**

EG 121

ENGLISH – II
(common to all branches)

Instruction	2L Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	2

Course Objectives:
- ➢ To understand the difference between oral and written communication, interpersonal and intrapersonal communication
- ➢ To acquaint the students with the process of technical writing through different types of reports and information transfer.
- ➢ To enhance the different sub- skills of reading through skimming and scanning.
- ➢ To enhance imaginative, creative and critical thinking through literary texts.
- ➢ To help students develop their Presentation skills through AV aids and different aspects of body language.

UNIT- I
Effective communication: Intrapersonal communication, Interpersonal communication, Dyadic Communication, One way versus two way communication and Johari Window.

UNIT- II
Grammer Practice: Common errors in English ad, Punctuation.
Vocabulary Enhancement:
Indian and American usage, Words often misspelt, Prefixes & Suffixes, technical vocabulary
Prose: Muthyala Raju Revu: An Engineer Turned IAS Officer.

UNIT- III
Writing Skills: Reports, Technical Report Writing, Information transfer: Flow charts, piecharts, graphs and scientific papers

UNIT- IV
Reading comprehension – Unknown passages, Skimming and Scanning, intensive reading and critical analysis.
Prose: R. Madhavan : Engineering to Farming

UNIT- V
Soft Skills: Presentation skills – Rubrics, use of AV aids and making of a Power Point Presentation, Body Language. Leadership skills and Team Building.

Text Books:

1. "Essential English"- E Suresh Kumar et al**.**(Orient Black Swan PVT Ltd.)
2. "Communication Skills and Soft Skills: An Integrated Approach"- E Suresh Kumar et al**. (**Pearson Publications)

Suggested Reading:

1. " High School English Grammar & Composition" – Wren and Martin (S.Chand)
2. "ABC of Common Grammatical Errors" – Nigel D Turton (Macmillan)
3. "Communication Skills & Soft Skills" – An Integrated approach – E Suresh Kumar (Pearson)
4. "Examine your English" – Margaret M Maison (Orient Longman)
5. "Professional Presentation" – Malcolm Goodale (Cambridge University Press)
6. "English Grammar at alance" – M. Gnanamurali (S. Chand)
7. "Business Communication & Soft skills" (Lab Manual) – D. Sudha Rani (Pearson)
8. "A Course Book in English" – K.R. Lakshminarayan (SciTech Publication)
9. "Effective Technical Communication" – M. Ashraf Rizvi (Tata- McGraw Hill)

MT 121

<div align="center">

MATHEMATICS – II
(common to all branches except Bio-Tech)

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Instruction	3L + 1T Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

UNIT- I
Ordinary differential Equations: Exact Differential equations (integrating Factors) Applications differential equations-Orthogonal trajectories-Problems on oscillatory electrical circuits (LC and LCR circuits). Linear Differential equations of higher order with constant coefficients, complementary function and particular integrals when RHS is of the forms e^{ax}, sinax, cosax, x^m, $e^{ax}(v)$, $x^m(v)$, where v-is a function of „x", Legender"s and Cauchy"s form of Homogeneous equations.

UNIT- II
Laplace Transforms: Definition of integral transform, domain of the function and kernel of the Laplace transforms. Existence of Laplace transforms. Properties- Laplace transforms of standard functions, Laplace transforms of piecewise continuous functions, first and second shifting theorems, multiplication by „t", division by "t". Laplace transforms of derivatives and integrals of functions-Unit step function- Periodic functions (without proofs). Inverse Laplace transforms-by partial fractions (Heaviside method), Residue method-Convolution Theorem. Solving Ordinary differential equations by Laplace Transforms

UNIT- III
Series solution of Differential equations: Introduction-ordinary and singular points of an equation-power series solution- Solution of Legender equation (without proof)- Legendre polynomials-Rodrigue"sformula-Generating function of Legender polynomials-Recurrence relations- orthogonal property.

UNIT- IV
Vector Differentiation: Scalar and vector fields- directional derivative- Gradient of a scalar-Divergence and Curl of a vector point function. Properties of divergence, curl - vector identities. Solenoidal and Irrotational vectors.

UNIT-V
Vector Integration: Vector Line integrals, surface integrals and volume integrals
Greens Theorem, Gauss divergence Theorem and Stokes theorem (without proofs)
Applications of Integration-problems based on verification and evaluation using the above theorems (for cube, rectangular parallelepiped, sphere, cylinder)

Text Books:

1. Advanced Engineering by Kreyszig, John Wiley & Sons -Publishers.
2. Mathematical Methods of Science & Engg, Aided with MATLAB, Kanti.B.Datta. Cengage Learning India Pvt.Ltd.
3. Mathematics for Engineers and Scientists by Alen Jaffery , 6th ed 2013 CRC press,Taylor & Francis Group. (Elsevier)
4. Advanced Engineering Mathematics by Michael Greenburg, Second Edition –Pearson Education.

Suggested Reading: (for further reading and examples on applications)

1. Mathematics for Engineers-a modern interactive approach by A.Craft and Robert Davison-Willey
2. Applied Mathematics and physicists by Loius Pipes-Mc Graw Hill pubulishers.
3. Advanced Engineering Mathematics by R.K.Jain & S.R.K.Iyenger, 3rd edition, Narosa Publications
4. Matrices for Engineering Dynamics by AR Collar and A. Simpson-John Willey & sons
5. Essential Mathematics for Engineers by W.Bolton-Betterworth and Heineman
6. Mathematical for Physicists and Engineers- L F Landoviz, Publishers- Rienfold Book Corporation.
7. Higher Engineering Mathematics by B.S.Grewal, Khanna Publishers.
8. Engineering Mathematics by B.V.Ramana
9. Calculus by Smith and Minton
10. Applications of Linear Algebra by David.C Lay

PY 122

APPLIED PHYSICS
(common to CSE, IT, ECE & EEE)

Instruction	3L Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

UNIT – I
Elements of Quantum Mechanics:
Introduction – Dual nature of light – de Broglie''s hypothesis – Expression for de Broglie''s wave length – Heisenberg''s uncertainty principle and its illustration (diffraction of a beam of electron at a slit) – Schrödinger time independent and time dependent wave equations – Interpretation of wave function – Infinite square well potential (particle in a box) – Potential step – Potential barrier (qualitative) – Tunneling effect.

UNIT – II
Crystallography: Space lattice – Unit cell – Crystal systems – Bravais lattices – Number of atoms per unit cell – Coordination number – Atomic radius – Packing fraction (for SC, BCC, FCC) – Lattice planes – Miller indices – Bragg''s law – Experimental determination of lattice constant of cubic crystals by powder diffraction method.
Crystal Defects: Classification of defects – Point defects – Concentration of Schottky & Frenkel defects.

UNIT – III
Band Theory of Solids: Salient features of classical free electron theory – Energy band formation in solids – Kronig-Penny model (qualitative) – Classification of solids into conductors, semiconductors and insulators.
Semiconductors: Intrinsic and extrinsic semiconductors – Concept of hole – Concept of Fermi level – Carrier concentration in intrinsic semiconductors – Conductivity in semiconductors – Hall Effect in semiconductors.

UNIT – IV
Magnetic Materials: Classification of magnetic materials: dia, para, ferro, anti-ferro and ferrimagnetic materials – Weiss molecular field theory – Domain theory – Hysteresis curve – Soft and hard magnetic materials.
Dielectric Materials: Introduction – Dielectric polarization – Types of dielectric polarization: electronic, ioninc, orientation and space-charge polarization (qualitative) – Frequency and temperature dependence of dielectric polarization – Determination of dielectric constant (Schering bridge method) – Ferroelectricity – Barium titanate – Applications of ferroelectrics.

UNIT – V
Superconductors: Introduction – General properties of superconductors – Meissner''s effect – Type I and Type II superconductors – BCS theory (qualitative) – Applications.
Thin Films: Distinction between bulk, thin and nanofilms – Thin film preparation techniques – Physical vapor deposition (PVD) techniques – Thermal evaporation – Electron beam evaporation – Pulsed laser deposition – Applications of thin films – Solar cell – Gas sensor.
Nanomaterials: Zero dimensional materials – Properties of materials at reduced size – Surface to volume ratio – Quantum confinement – Preparation of nanomaterials – Bottom-up methods: Sol-gel, Sputtering and Chemical vapor deposition (CVD) – Top-down methods: Ball milling – Elementary ideas of carbon nanotubes – Applications.

Text Books:

1. M.N. Avadhanulu and P.G. Kshirsagar, *A Text BookEngineering Physics*, S. Chand Publications, 2014
2. S.L. Gupta and Sanjeev Gupta, *Modern Engineering Physics*, DhanpatRai Publications, 2011
3. V. Rajendran, *Engineering Physics*, McGahill Education Publications, 2013

Suggested Reading:

1. R. Murugeshan and KiruthigaSivaprasath, *Modern Physics*, S. Chand Publications, 2005
2. M. Arumugam, *Materials Science*, Anuradha Publications, 2002.
3. Satyaprakash and Agarwal, *Statistical mechanics*, Kedannath Publications
4. P.K. Palanisamy, *Engineering Physics*, Scitech Publications, 2012
5. Hitendra K Malik and A.K. Singh, *Engineering Physics*, Tata McGahill Education Publications, 2011

CY 121

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ENGINEERING CHEMISTRY - II
(common to all branches except Chemical Engg & Bio-Tech)

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Instruction	3L Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

Course Objectives:

The syllabus has sought to fulfill the objective of making the student of engineering and technology realize that chemistry like other subjects is the real base of his profession and that therefore he must have a good understanding of chemistry before he can use it in his profession. The various units of the syllabus is so designed to fulfill the following objectives.

1. Thermodynamics and Electrochemistry units give conceptual knowledge about spontaneous processes and how can they be harnessed for producing electrical energy and efficiency of systems. It also includes the devices used for electrical energy storage and captive generation and tapping it as and when required.
2. Newer materials lead to discovering of technologies in strategic areas like defense and space research. Recently modern materials synthesized find applications in industry and creating instruments for solving problems of electronics, telecommunications, health care, agriculture, and technology etc., Inorder to emphasize the above the topics like composite materials, polymers, conducting polymers and nano materials have been incorporated in the curriculum.
3. Knowledge to prevent corrosion of machinery and metallic materials and water chemistry which require serious attention in view of increasing pollution has been included in the syllabus.
4. Fuels have been taught with a view to give awareness as to materials which can be used as sources of energy and fuel cells which are the alternate energy sources for generating electrical energy on spot and portable applications.
5. To appraise the students about the importance and role of chemistry in the field of Engineering by explaining the relevant topics.
6. To enable students to apply the knowledge acquired in improving the properties of engineering materials.

The engineer who has the above background can effectively manage the materials in his designing applications anddiscovering and improving the systems for various uses in industry, agriculture, health care, technology, telecommunications,electronics and instruments detecting in advance in natural calamities. The above knowledge also helps students to carry out inter disciplinary research such that the findings benefit the common man.

UNIT – I
Electrochemistry
Introduction, construction of electrochemical cell, sign convention, cell notation, cell emf, SOP and SRP, electrochemical series and its applications
Activity, fugacity, Nernst equation and applications, numericals
Types of Electrodes – Standard Hydrogen Electrode, Saturated Calomel Electrode, Quinhydrone electrode and Ion selective electrode (Glass electrode), construction

UNIT – II
Corrosion Science
Introduction, causes and effects of corrosion, chemical and electro chemical corrosion, mechanism of electro chemical corrosion
Galvanic corrosion and types of differential aeration corrosion (pitting and waterline corrosion)
Factors affecting corrosion (position of the metals in galvanic series, relative areas of anode and cathode, nature of corrosion product – solubility and volatility of corrosion product, nature of corroding environment – temperature, humidity and P^H).
Corrosion control methods – cathodic protection, sacrificial anodic protection and impressed current cathodic protection.
Protective coatings – Anodic and cathodic coatings
Paints, constituents and their functions

UNIT – III
Water Chemistry
Hardness of water – Types, units of hardness, estimation of temporary and permanent hardness of water by EDTA method, alkalinity of water and its determination
Numericals on hardness and alkalinity
Specifications of potable water, disinfection of water by chlorination, break point chlorination and by ozone treatment
Desalination of water by reverse osmosis and electro dialysis

UNIT – IV
Fuels – II
Liquid fuels, fractional distillation of crude oil, cracking and significance, catalytic cracking by fixed bed cracking, knocking, significance, antiknocking agents (TEL, MTBE), octane number, cetane number, unleaded petrol.
Gaseous fuels, LPG, CNG, composition and uses, automobile exhaust – catalytic converter.

Battery Technology
Types of batteries, Lithium battery and Lithium ion battery, fuel cell – MeOH – Oxygen fuel cell, H_2-O_2 fuel cell Rocket propellants, requirements of a good propellant, classification, solid-liquid propellants with examples. Photo catalysis

UNIT –V
Instrumental Techniques in Chemical Analysis
Principle, method and applications of Conductometry (acid-base titration), Potentiometry (acid-base, redox titration), P^H-metry (acid – base titration), UV, Visible Spectro photometer (Beer-Lambert"s Law), examples
Atomic absorption spectroscopy-Principle, instrumentation (Block Diagram only), estimation of Nickel by Atomic absorption spectroscopy

Text Books:

1. J.C. Kuriacase & J. Rajaram, "Chemistry in engineering and Technology", Tata McGraw-Hill Pub.Co.Ltd, New Delhi (2008)
2. S.S.Dara & S.S.Umare, "Engineering Chemistry", S.Chand company
3. ShasiChawla, "Text Book of Engineering Chemistry", Dhantpat Rai Publishing Company, NewDelhi (2008)
4. P.C.Jain and Monica Jain, "Engineering Chemistry", Dhanpat Rai Pub, Co., New Delhi (2002)
5. Puri & Sharma, "Principles of Physical Chemistry
6. P.R.Vijayasarathi, "Engineering Chemistry" PHI Learning Private Limited, New Delhi (2011)

Suggested Reading:

1. Physical chemistry by P.W.Atkin (ELBS OXFORD PRESS)
2. Physical chemistry by W.J.Moore (Orient Longman)
3. Physical Chemistry by Glasstone
4. Physical Chemistry by T.Engel & Philip Reid, Pearson Publication
5. Introduction to nano materials by T.Pradeep

CS 121

OBJECT ORIENTED PROGRAMMING THROUGH C++
(common for all branches)

Instruction	3L + 1T Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

UNIT- I
Principles of Object Oriented Programming: Procedure Vs Object Oriented, Paradigm, Basic concepts, benefits, Applications and Object Oriented Languages.
Introduction: Program structure, Creating, Compiling and Linking of C++ program.
Token, Expression and Control Structures: Tokens, Keywords, Identifiers and Constants, Data Types, Operators, Precedence, Type Compatibility, Control Structures, New Features of C++.
Functions: Function Prototype and Parameter Passing, Inline Functions, Default, Constant Arguments, Recursion, Function Overloading, Function Template.

UNIT - II
Classes and Objects: Defining classes and Member functions, Arrays, Static Members, Friend Functions.
Constructors and Destructors: Type of Constructors, Dynamic Initialization of Objects, Destructors.

UNIT - III
C++ operator overloading: Fundamentals, restrictions, overloading unary / binary operators, overloading ++ and --, Manipulation of Strings.
C++ Inheritance: Defining derived classes, Types of Inheritance, Virtual Base class Abstract Class, Nesting of classes.

UNIT- IV
Pointers and Polymorphism: Pointers and Generic pointer, Pointer to Objects and Derived Classes, this pointer, Virtual Functions, Virtual Destructors.
C++ Stream Input/Output: Streams, Stream classes, Formatted and Unformatted operations, Manipulators.
Files: Classes for file Stream operations, Sequential and Random access operations, Command line Arguments

UNIT - V
C++ Templates: Introduction, class templates, member function template, overloading template functions.
C++ Exception Handling: Try, throw, catch

Suggested Reading:

1. E. Balagurusamy "Object Oriented Programming with C++" , McGraw-Hill Education (India), 6 th Edition 2013
2. Bjarne Stroustrup "The C++ Programming Language", Pearson Education, 5th Edition (2013)
3. Robert Lafore **"**Object-Oriented Programming in C++ " Fourth Edition Sams Publishing,2002

EE 111

PRINCIPLES OF ELECTRICAL ENGINEERING
(common to CSE, IT & Bio-Tech)

Instruction	3L + 1T Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

UNIT – I

D.C. Circuits and network theorems: Electric Circuit parameters(R,L,C), Voltage, Current, Power, Kirchhoff's laws, mesh current and node voltage analysis, superposition theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem.

UNIT – II

Electromagnetic Induction: Electromagnetic induction, Faraday's laws of electromagnetic induction, static and dynamically induced EMF

A.C. Circuits: Generation of alternating voltage and current, equation of alternating voltage and current, average and rms values of sinusoidal quantities, form and peak factors, phasor representation of sinusoidal quantities, ac through pure resistance pure Inductance, pure capacitance, AC series RL,RC,RLC circuits.

UNIT- III

D.C Generators: working principle, construction, types of armature winding, emf equation, types of excitation, characteristics of series, shunt and compound generators, losses and efficiency.
D.C Motors: working principle, back emf, types of excitation, torque equation, characteristics of series, shunt and compound motors, speed control of shunt and series motors.

UNIT - IV

Single phase transformer: Constructional details, working principle, Ideal transformer, emf equation, equivalent circuit, voltage regulation, losses and efficiency, condition for maximum efficiency, open circuit and short circuit test.

UNIT -V

Three phase Induction Motors: Construction, production of rotating magnetic field, working principle, types, slip, torque equation, starting torque, maximum torque, torque slip characteristics.

Text Books:

1. Edward Hughes, Electrical Technology, 6th Edition, ELBS, 2001
2. V.K. Mehta, Principles of Electrical engineering, S.Chand & Co

Suggested Reading:

1. B.L. Theraja & A.K. Theraja, Electrical Technology, Vol.I, S.Chand & Co
2. P.V.Prasad & S. Siva Nagraju, Electrical Engineering: Concepts & Applications, Cengage Learning

CE 111

ENGINEERING MECHANICS - 1
(common to all branches)

Instruction	3L + 1T Periods per week
Duration of University Examination	3 Hours
University Examination	75 Marks
Sessionals	25 Marks
Credits	3

Objectives:
- To provide fundamental understanding of any anatomy for which Engineering Mechanics forms the basis.
- To understand the concept of force transfer, necessary conditions of equilibrium, significance of friction and geometric properties in statics.
- To equip the students to apply the principles learnt for the analysis of structures and equipments.

Unit - I
Force Systems: Resolution of coplanar and non-coplanar force systems (both concurrent and non-concurrent), Determining the resultant of all force systems using scalar and vector concepts. Moment of force and its applications.

Unit – II
Equilibrium of force system: Free body diagrams, equations of equilibrium of planar force systems. Equilibrium of spatial force systems.

Unit – III
Theory of friction: Introduction, types of friction, laws of friction, application of friction to a single body & connecting systems. Wedge and belt friction.

Unit – IV
Centroids: Significance of centroids, moment of area, centroids of line elements, plane areas, composite areas, theorems of Pappus & its applications.

Unit – V
Area Moment of Inertia: Definition, polar moment of Inertia, radius of gyration, transfer theorem, moment of Inertia of plane & composite areas, product of inertia, transfer formula for product of inertia.

Text Books:
1. K. Vijay Kumar Reddy and J. Suresh Kumar, *Singer's Engineering Mechanics*, BS Publications, Hyderabad, 2011.
2. Ferdinand L Singer, *Engineering Mechanics,* Harper and Collins, Singapore, 1904.

Suggested Reading:
1. A. Nelson, *Engineering Mechanics*, Tata McGraw Hill, New Delhi, 2010.
2. S. Rajashekaran & G. Sankarasubramanyam, *Engineering Mechanics,* Vikas publications, Hyderabad, 2002.
3. S.B. Junarkar and H.J Shah, *Applied Mechanics*, Charotar publishers, New Delhi, 2001.
4. Basudeb Bhattacharyya, *Engineering Mechanics,* Oxford University Press, New Delhi, 2008.
5. K.L Kumar & Veenu Kumar, *Engineering Mechanics,* Tata McGraw Hill, New Delhi, 2011.

EG 122

ENGLISH LANGUAGE LABORATORY – II
(common to all branches)

Instruction	2 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	1

COMUR ASSISTED LANGUAGE LEARNING LAB (CALL)

Introduction:

The language lab focuses on the practice of connected speech and word stress. They are also introduced to the process of Listening.
The following are the **objectives** of the course:
1. To recognize and be familiar with word stress and identify stress patterns.
2. To develop awareness of rhythm and notion of stress time.
3. Listen effectively in a variety of situations for a variety of purposes, practice the behavior of effective , active listeners.
4. Assess strengths in listening and set goals for the future.

SYLLABUS:

1. Word stress: Primary stress, secondary stress, functional stress, rules of word stress.
2. Rhythm & Intonation: Introduction to Rhythm and Intonation. Major patterns, intonation of English with the semantic implications.
3. Aspects of connected speech: Strong forms, weak forms, contracted forms, elision.
4. Listening skills.

INTERACTIVE COMMUNICATION SKILLS LAB (ICS LAB)

Introduction:

The objective of the course is to introduce them to the art of making effective presentations. They also learn do debate, the interview process and interview skills.
The following are the **objectives** of the course:

1. To enable students to express themselves fluently and appropriately in social and professional contexts.
2. To provide techniques for preparing and delivering a presentation.
3. Practicing interview skills via an interpersonal encounter similar to real life situation.
4. To understand and communicate various forms of argument effectively, to develop the ability to analyze, evaluate, construct and refute arguments.

SYLLABUS:

1. Debate: Differences between a debate and a group discussion. Essentials of a debate, conducting a debate.
2. Presentation Skills: Making effective presentations, expressions which can be used in presentation, use of non-verbal communication, coping with stage fright , handling question and answer session; use of audio- visual aids , Power point presentations.
3. Interview skills: Planning and preparing for interviews, facing interviews confidently, use of suitable expressions during interview.

Suggested Reading:

1. E.Suresh kumar et al, **. English for Success** (with CD), Cambridge University Press India Pvt Ltd. 2010.
2. T Balasubramanian. **A Textbook of English Phonetics for Indian Students**, Macmillan, 2008.
3. J Sethi et al. **A Practical Course in English Pronunciation** (with CD), Prentice Hall India, 2005.
4. Edgar Thorpe. **Winning at Interviews**, Pearson Education, 2006
5. Priyadarshi Patnaik**. Group Discussions and Interviews,** Cambridge University Press Pvt Ltd 2011

PY 125

ENGINEERING PHYSICS LAB - II
(common to all branches except Bio-Tech)

Instruction	3 Periods per alternate week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	2

1. Planck"s Constant – Determination of Planck"s Constant using photo cell

2. Solar Cell – Study of I-V characteristics of given solar cell and calculation of fill factor, efficiency and series resistance

3. Hall Effect – Determination of Hall coefficient, carrier concentration & mobility of charge carriers of given semiconductor specimen

4. P-N Junction Diode – Study of V-I characteristics and calculation of resistance of given diode in forward and reverse bias

5. B-H Curve – Determination of hysteresis loss of given specimen

6. Dielectric Constant – Determination of dielectric constant of given PZT sample at phase transition temperature

7. Energy Gap – Determination of energy gap of given semiconductor

8. Thermistor – Determination of temperature coefficient of resistance of given thermistor

9. *e/m* of Electron by Thomson"s Method

10. Thermoelectric Power – Determination of thermoelectric power of given sample

CY 123

ENGINEERING CHEMISTRY LAB - II
(common to all branches except Chemical and Bio-Tech)

Instruction	3 Periods per alternate week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	2

Course Objectives

1. To impart fundamental knowledge in handling the equipment/glassware and chemicals in the chemistry laboratory.
2. To offer hands on experience on the basic equipment related to engineering chemistry.
3. For practical understanding of theoretical concepts of chemistry

I. Volumetric Analysis:
    1. Estimation of amount of copper ion using hypo solution.
    2. To find out saponification number of oil.

II. Complexometry
    3. Estimation of permanent and temporary hardness of water using EDTA solution.
    4. Ore analysis – estimation of MnO_2 in pyrolusite.

III. Organic Preparations
    9. Preparation of aspirin
    10. Preparation of azodye

IV. Instrumental Chemical Analysis
    i) Potentiometric Titrations
      5. Strong acid vs strong base
      6. Redox titration (estimation of Fe^{+2} using $KMnO_4$ solutions)

    ii) pH metric titration
      7. Strong acid vs strong base

    iii) Polarimetry
      8. Specific rotation of sucrose and inversion of sucrose.

Suggested Reading:

1. Vogel''s text book of quantitative chemical analysis by J.Mendham & Thomas, Pearson education; Pvt.Ltd.new Delhi 6th ed.2002
2. Senior practical physical chemistry by BD Khosla, A.Ghulati, VC.Garg; R.Chand and CD; New Delhi 10th ed 2001.
3. Laboratory manual in engineering chemistry by S.K.Bhasin and Sudha Rani; Dhanpath Rai publishing company.

CS 122

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PROGRAMMING LAB - II
(common for all branches)

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Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessionals	25 Marks
Credits	2

1. Program to implement function overloading

2. Program to implement function template

3. Program to implement types of constructors and destructor

4. Program to implement new and delete operators (Dynamic memory allocation).

5. Program to implement unary and binary operator overloading

6. Creation of inheritance hierarchy for graphic shapes.

7. Implementation of runtime polymorphism

8. Classes for Bank Account, Student information, Library catalog

9. Implementation of Streams.

10. Implementation of Template Classes.

ME 114   **WORKSHOP**
                                    (common to CSE, IT, ECE & EEE)

Instruction   3 Periods per week
Duration of University Examination   3 Hours
University Examination   50 Marks
Sessionals   25 Marks
Credits   2

Trades For Practice

1. **Carpentry**	2. **Plumbing**	3. **House Wiring**	4. **Tin Smithy & Soldering**

Exercises in Carpentry

1. To plane the given wooden piece to required size

2. To make a cross lap joint on the given wooden piece according to the given dimensions.
3. To make a Tee lap joint on the given wooden piece according to the given dimensions.
4. To make a dove tail-joint on the given wooden piece according to the given dimensions.
5. To make a bridle joint on the given wooden piece according to the given dimensions.

Exercises in Plumbing

1. To make external threads for GI pipes using dies.

2. To connect the GI pipes as per the given diagram using taps, couplings & bends.

3. To connect the GI pipes as per the given diagram using, couplings, unions, reducer & bends.

4. To connect the GI pipes as per the given diagram using shower, tap & valves

5. Demonstration of above exercise by giving water connection.

Exercises in House Wiring

1. Wiring of one light point controlled by one single pole switch, a three pin socket controlled by a single pole switch, andwiring of one buzzer controlled by a bell push.

2. Wiring of two light points connected in series and controlled by single pole switch. Verify the above circuit withdifferent bulbs.

3. Wiring of two light points connected in parallel from two single pole switches and a three pin socket

4. Stair case wiring-wiring of one light point controlled from two different places independently using two 2-way switches.

5. Go-down wiring.

Exercises in Tin Smithy

1. To make a square tray from the given sheet metal.

2. To make a rectangular box from the given from the sheet metal with base and top open. Solder the corners.

3. To make a scoop.

4. To make a dust pan from the given sheet metal.

5. To make a pamphlet box.

Demonstration of BOSCH tools.

Note: A minimum of 12 exercises from the above need to be done