

**CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY**  
**ELECTRICAL & ELECTRONICS ENGINEERING**  
**B. E. I – Year**

**I – Semester**

<b>THEORY</b>						
S.No	Code	Subject	L	T	P/D	Credits
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 111	Engineering Mechanics - I	3	1	0	3
7	CE 112	Environmental Studies	3	1	0	3
<b>PRACTICALS</b>						
8	EG112	English Language Laboratory – I	0	0	2	1
9	PY 114/ CY 114	Engineering Physics Lab – I/ Engineering Chemistry Lab – I	0	0	3	2
10	CS 114	Programming Lab – I	0	0	3	2
11	ME 114	Workshop	0	0	3	2
<b>TOTAL</b>			<b>20</b>	<b>04</b>	<b>11</b>	<b>27</b>

**II – Semester**

<b>THEORY</b>						
S.No	Code	Subject	L	T	P/D	Credits
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 121	Basic Electrical Engineering	3	1	0	3
7	ME 112N	Engineering Graphics	1	0	3	3
<b>PRACTICALS</b>						
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	EE 122	Basic Electrical Engineering Lab	0	0	3	2
<b>TOTAL</b>			<b>18</b>	<b>03</b>	<b>14</b>	<b>27</b>

**ENGLISH – I**  
(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 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

**MATHEMATICS – I**  
(common to all branches except 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: 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.

**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, 6<sup>th</sup> edition 2013 CRC press, Taylor & Francis Group.(Elsevier)
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-Wiley
2. Applied Mathematics and physicists by Loius Pipes-Mc Graw Hill publishers.
3. Advanced Engineering Mathematics by R.K.Jain & S.R.K.Iyenger, 3<sup>rd</sup> 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. Mathematics 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 Engg & Bio-Tech)

Instruction	3L 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 ultrasonics – 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 Fraunhofer 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. Murugesan 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

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

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 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”, Dhanpat Rai Publishing Company, New Delhi (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.Vijayarathi, “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.

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

**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, 2<sup>nd</sup> Edition 2011.
2. B. W. Kernighan & D.M. Ritchie, "The 'C' Programming Language" Prentice Hall India, 2<sup>nd</sup> Edition. 1990.
3. R S Bichkar "Programming with C" University Press, 2012.

**Suggested Reading:**

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

**ENGINEERING MECHANICS - I**  
(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. Rajashekar & 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.



**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 Reading:**

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.

**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 University Press 2009.

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

Instruction	3 Periods per alternate 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

**ENGINEERING CHEMISTRY LAB - I**  
(common to all branches except Chemical Engg & 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. 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 6<sup>th</sup> ed.2002.
2. Senior practical physical chemistry by BD Khosla, A.Ghulati, VC.Garg; R.Chand and CD; NewDelhi 10<sup>th</sup> edition
3. Laboratory manual in engineering chemistry by S.K.Bhasin and Sudha Rani; Dhanpath Rai Publishing company

**PROGRAMMING LAB- I**  
**(common to all branches except Chemical Engg)**

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.

## 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
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#### 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, and wiring 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 with different 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