

ANNA UNIVERSITY : : CHENNAI – 600 025

UNIVERSITY DEPARTMENTS

CURRICULUM – R 2008

B.E. INFORMATION TECHNOLOGY

I & II SEMESTERS CURRICULUM AND SYLLABI

SEMESTER - I

CODE NO.	COURSE TITLE	L	T	P	C
<b>THEORY</b>					
HS9111	<a href="#">Technical English - I</a>	3	1	0	4
MA9111	<a href="#">Mathematics - I</a>	3	1	0	4
PH9111	<a href="#">Engineering Physics</a>	3	0	0	3
CY9111	<a href="#">Engineering Chemistry</a>	3	0	0	3
GE9111	<a href="#">Engineering Graphics</a>	2	0	3	4
GE9112	<a href="#">Fundamentals of Computing</a>	3	0	0	3
<b>PRACTICAL</b>					
PH9112	<a href="#">Physics Laboratory</a>	0	0	2	1
CY9112	<a href="#">Chemistry Laboratory</a>	0	0	2	1
GE9113	<a href="#">Engineering Practices Laboratory</a>	0	0	3	2
GE9114	<a href="#">Computer Practices Laboratory</a>	0	0	3	2
<b>TOTAL</b>		<b>17</b>	<b>2</b>	<b>13</b>	<b>27</b>

SEMESTER II

CODE NO	COURSE TITLE	L	T	P	C
<b>THEORY</b>					
HS 9161	<a href="#">Technical English II</a>	2	0	2	3
MA 9161	<a href="#">Mathematics II</a>	3	1	0	4
PH 9168	<a href="#">Physics for Communication Engineering</a>	3	0	0	3
GE 9151	<a href="#">Engineering Mechanics</a>	3	1	0	4
EC 9161	<a href="#">Electronic Devices and Circuits</a>	3	0	0	3
CS 9151	<a href="#">Programming and Data Structures I</a>	3	0	0	3
<b>PRACTICAL</b>					
EC 9167	<a href="#">Electronic Devices and Circuits Laboratory</a>	0	0	3	2
CS 9153	<a href="#">Programming and Data Structures Laboratory I</a>	0	0	3	2
<b>TOTAL</b>		<b>17</b>	<b>2</b>	<b>8</b>	<b>24</b>

HS 9111

**TECHNICAL ENGLISH I**  
(Common to all branches of B.E. / B.Tech. Programmes)

**L T P C**  
**3 1 0 4**

**AIM:**

To help students specialising in the field of Engineering and Technology develop their proficiency in oral and written communication in Technical English.

**OBJECTIVES:**

- To enable students improve their vocabulary and employ the words appropriately in different academic and professional contexts.
- To make students comprehend classroom lectures and technically oriented passages.
- To enable students develop suitable reading strategies that could be adopted while reading science related texts.
- To enable students acquire the ability to speak effectively in English in real life situations and work-related situations.
- To train students in academic and professional writing.

**UNIT I**

**9+3**

Vocabulary - using words in context - use of suffixes to form nouns from verbs and adjectives – adjectives, adverbs - matching words with meanings - Active and passive voices – tenses - simple present, present continuous - comparative adjectives – adverbial forms - Reading text: skimming for general information - specific details - note making - cloze reading – Listening and transferring of information from text to graphic forms - bar charts, flow-charts - Paragraph writing - descriptions using descriptive words and phrases - organising information - Role play - conversational techniques – discussions - oral reporting.

**UNIT II**

**9+3**

Vocabulary items - words with prefixes (“multi-“, “under-“) - Asking and answering questions, error correction - spelling and punctuation - Reading Comprehension - scanning for information – inferring meaning from context - Listening and guided note-taking - paragraph writing - using notes – giving suitable headings / subheadings for paragraphs – Comparing and contrasting using expressions of comparison - Discussion using creative ideas

**UNIT III**

**9+3**

Compound nouns - negative prefixes – antonyms – Use of modal verbs – making sentences using phrases – tenses – simple past and present perfect - Reading and guessing meanings in context - Listening and note taking - Channel conversion from text to chart - Writing comparisons - making recommendations - coherence using discourse markers - Discussion - role-play (explaining and convincing)

**UNIT IV**

**9+3**

Expanding nominal compounds – words with multiple meanings – Error correction - prepositions - use of the prefix “trans-“ - compound adjectives - modal verbs to express probability - simple past and present perfect - Reading – prediction of content - understanding advertisements - scanning the text and comprehension check - Listening for details - Writing definitions – expression of use and purpose - Role-play – discussion - speculating about the future

## UNIT V

9+3

Formation of nouns, verbs and adjectives from root words – some useful phrases and expressions - cloze exercises - 'If' conditional clauses – gerunds (verbal nouns) - Reading for comprehension - intensive reading - Accuracy in listening – listening to discussion on specific issues - Group discussion - role-play (stating, discussing problems and proposing solutions) - Planning a tour - Writing an itinerary - Writing formal letters - letter to the editor

**LECTURE – 45 TUTORIAL – 15 TOTAL – 60 PERIODS**

## TEXTBOOKS

1. Department of Humanities and Social Sciences, Anna University, **English for Engineers and Technologists**, Vol. I and II (Combined Edition), Orient Longman, Pvt. Ltd., 2006. Themes 1 to 4.

## REFERENCES

1. Day, R.A, Scientific English, Second Edition, Hyderabad: Universities Press, 2000.
2. Mitra, B.K, Effective Technical Communication: A Guide for Scientists & Engineers, New Delhi: Oxford University Press, 2006.
3. Website: [www.uefap.co.uk](http://www.uefap.co.uk)

MA 9111

**MATHEMATICS – I**

**L T P C**

**(Common to all branches of B.E. / B.Tech. Programmes) 3 1 0 4**

## AIM:

To make available the basic concepts of engineering mathematics, to prepare the student for new concepts to be introduced in the subsequent semesters and to provide the necessary mathematical skills that are needed in modeling physical processes by an engineer.

## OBJECTIVES:

- To develop the use of matrix algebra techniques this is needed by engineers for practical applications.
- To make the student knowledgeable in the area of infinite series and their convergence so that he/ she will be familiar with limitations of using infinite series approximations for solutions arising in mathematical modeling
- To familiarize the student with functions of several variables which is needed in many branches of engineering
- To introduce the concepts of improper integrals, Gamma, Beta and Error functions which are needed in engineering applications
- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage





**TEXT BOOKS:**

1. Palanisamy, P.K., Engineering Physics, Scitech Publications (P) Lt, 2006.
2. Arumugam, M., Engineering Physics, Anuradha Publ., 2000.

**REFERENCES:**

1. Gaur R.K., and Gupta, S.L Engineering Physics, Dhanpat Raj Publ., 2003.
2. Sankar B.N., Pillai.S.O., Engineering Physics, New age International (P) Ltd, 2007

<b>CY9111</b>	<b>ENGINEERING CHEMISTRY</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>(Common to all branches of Engineering and Technology)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**AIM:**

To gain a sound knowledge of thermodynamics, phase rule, surface chemistry and catalysis, basic organic reaction mechanisms and principles and applications of spectroscopy and nanochemistry.

**OBJECTIVES:**

To make the student conversant with the

- Applications of second law of thermodynamics.
- Phase rule and various types of alloys
- Surface chemistry and its importance in adsorption and catalysis.
- Basic principles in organic reaction mechanisms and principles and applications of spectroscopy
- Nanochemistry and its applications

**UNIT I THERMODYNAMICS 9**

Statement of second law of thermodynamics – Clausius and Kelvin – definition of entropy – entropy change for a reversible process – entropy change for flow of heat in an irreversible process – entropy change for an isothermal expansion of an ideal gas – problems – entropy of phase transitions- problems – definition of free energy and work function – Gibbs Helmholtz equation – applications – problems – derivation of Maxwell relations – van't Hoff isotherm and isochore – applications – problems – chemical potential – variation of chemical potential with temperature and pressure - significance.

**UNIT II PHASE RULE 9**

Phase rule – statements and explanation of the terms involved – condensed phase rule – construction of phase diagram – water system – sulphur system – phase rule for two component alloy systems- thermal analysis – eutectic system - Lead-Silver system – simple eutectic formation – Zinc-Magnesium alloy system – Iron-Carbon alloy system- solved examples.

**UNIT III SURFACE CHEMISTRY AND CATALYSIS 9**

Adsorption – types of adsorption – adsorption of gases on solids – adsorption isotherm – Freundlich and Langmuir isotherms – adsorption of solutes from solutions – applications – role of adsorption in catalytic reactions – ion exchange adsorption – basic principles in adsorption chromatography – Catalysis – classification – characteristics of catalysis - auto catalysis – enzyme catalysis – Michaelis – Menton equation – solid acid catalysis.

**UNIT IV ORGANIC REACTIONS AND SPECTROSCOPY 9**

Electrophilic and nucleophilic, substitution and elimination reactions mechanisms – SN<sup>1</sup>, SN<sup>2</sup>, E<sup>1</sup>, E<sup>2</sup> reactions – Electromagnetic spectrum – absorption of radiation – electronic transition – vibrational transition – rotational transition – intensities of spectral lines – Beer-Lambert's law – type of instrument used for absorption measurements – UV & visible spectroscopy, IR spectroscopy – principles of instrumentation and applications.

**UNIT V NANOCHEMISTRY 9**

Introduction to nanochemistry – preparations and properties of nanomaterials - nanorods – nanowires – nanotubes – carbon nanotubes and their applications – nanocomposites – sensors and electronic devices – nanochemistry in biology and medicines – nanocatalysis.

**TOTAL : 45 PERIODS**

**TEXT BOOKS:**

1. Puri B.R., Sharma L.R. and Madhan S. Pathania, Principles of Physical Chemistry, Shoban Lal Nagin Chand & Co. Jalandar –2000.
2. Jain P.C. and Renuka Jain, Physical Chemistry for Engineers, Dhanpet Rai & Sons, New Delhi, 2001.

**REFERENCES**

1. Bahl B.S., Tuli G.D., and Arun Bahl, Essentials of Physical Chemistry, S. Chand & Company Ltd., New Delhi, 2004.
2. Morrison R.T., & Boyd R.N., Organic chemistry, Prentice-Hall of India Private Limited, New Delhi, 1992.
3. Sanyal S.N., Reactions, Rearrangements and Reagents Bharati Bhawan Publishers & Distributors New Delhi, 2006.
4. G. B. Sergeev, Nanochemistry, Elsevier Science, New York, 2006

**GE 9111 ENGINEERING GRAPHICS LT P C**  
**(Common to All branches of B.E. / B.Tech. Programmes) 2 0 3 4**

**OBJECTIVES:**

To develop in students the graphic skills that would enable them to communicate the concepts, ideas and design of engineering products  
To provide an exposure to the national/international standards related to technical drawings

## **INTRODUCTION**

**2**

Importance of graphics in engineering applications – use of drafting instruments – BIS specifications and conventions – size, layout and folding of drawing sheets – lettering and dimensioning

## **UNIT I FREE HAND SKETCHING OF ENGG OBJECTS AND CONSTRUCTION OF PLANE CURVE**

**3+9=12**

Pictorial representation of engineering objects – representation of three dimensional objects in two dimensional media – need for multiple views – developing visualization skills through free hand sketching of three dimensional objects.

Polygons & curves used in engineering practice– methods of construction– construction of ellipse, parabola and hyperbola by eccentricity method – Cycloidal and involute curves- construction - drawing of tangents to the above curves.

## **UNIT II ORTHOGRAPHIC PROJECTION: PROJECTION OF POINTS, LINES AND PLANE SURFACES**

**6+9=15**

General principles of orthographic projection – first angle projection – layout of views – projections of points, straight lines located in the first quadrant – determination of true lengths of lines and their inclinations to the planes of projection – traces – projection of polygonal surfaces and circular lamina inclined to both the planes of projection

## **UNIT-III ORTHOGRAPHIC PROJECTION: PROJECTION OF SOLIDS AND SECTIONS OF SOLIDS**

**6+9=15**

Projection of simple solids like prism, pyramid, cylinder and cone when the axis is inclined to one plane of projection –change of position & auxiliary projection methods- sectioning of above solids in simple vertical positions by cutting plane inclined to one reference plane and perpendicular to the other and above solids in inclined position with cutting planes parallel to one reference plane – true shapes of sections

## **UNIT IV DEVELOPMENT OF SURFACES AND INTERSECTION OF SOLIDS**

**6+9=15**

Need for development of surfaces – development of lateral surfaces of simple and truncated solids – prisms, pyramids, cylinders and cones – development of lateral surfaces of the above solids with square and circular cutouts perpendicular to their axes. Intersection of solids and curves of intersection –prism with cylinder, cylinder & cylinder, cone & cylinder with normal intersection of axes and d with no offset.

## **UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS**

**4+9=13**

Principles of isometric projection – isometric scale – isometric projections of simple solids, truncated prisms, pyramids, cylinders and cones – principles of perspective projections – projection of prisms, pyramids and cylinders by visual ray and vanishing point methods.

## **COMPUTER AIDED DRAFTING (DEMONSTRATION ONLY)**

**3**

Introduction to computer aided drafting software packages and demonstration of their use.

**L=30 P=45 TOTAL: 75 PERIODS**



## TEXT BOOKS

1. Bhatt,N.D, “Engineering Drawing”, Charotar Publishing House, 46<sup>th</sup> Edition-2003
2. Natarajan,K.V, “ A Textbook of Engineering Graphics”, Dhanalakshmi Publishers, Chennai, 2006 .

## REFERENCES

1. Shah,M.B and Rana,B.C.,”Engineering Drawing”, Pearson Education,2005,
2. Gopalakrishnan.K.R.,. “Engineering Drawing I & II”, Subhas Publications 1998.
3. Dhananjay,A.J., “Engineering Drawing with Introduction to AutoCAD”, Tata McGraw-Hill Publishing Company Ltd., 2008.
4. Venugopal,K. and Prabhu Raja, V., “Engineering Graphics”, New Age International(P) Ltd.,2008.

### Codes from Bureau of Indian Standards

1. IS 10711-2001: Technical Products Documentation – Size and Layout of Drawing Sheets
2. IS 9609 (Parts 0 & 1 )-2001: Technical Products Documentation – Lettering
3. IS 10714(Part 20)-2001 & SP 46 -2003: Lines for Technical Drawings
4. IS 11669-1986 & SP 46-2003: Dimensioning of Technical Drawings  
IS 15021(Parts 1 to 4)-2001: Technical Drawings-Projection Methods

### Special points applicable to University Examinations on Engineering Graphics:

1. There will be five questions one from each unit covering all units of the syllabus
2. All questions will carry equal marks of 20 each making a total of 100
3. Answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solutions within A3 size
4. The examination will be conducted in appropriate sessions on the same day

<b>GE 9112</b>	<b>FUNDAMENTALS OF COMPUTING</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>(Common to all branches of B.E. / B.Tech. Programmes)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### AIM:

To introduce the basics of computing and the fundamentals of C programming.

#### OBJECTIVES:

- To introduce the fundamentals of computing systems.
- To introduce the concepts of internet and WWW.
- To teach programming in C.

**UNIT I** **9**  
Computer systems – Exploring computers – Inside the system – Processing data – CPUs – Types of storage devices - Operating systems basics – Networking basics.

**UNIT II** **9**  
The internet and the WWW – Internet services – connecting to the internet - Working with applications software – productivity software – graphics and multimedia – Data base Management systems – Creating computer program.

**UNIT III** **9**  
C programming fundamentals – compilation process – variables – Data types – Expressions – looping – decisions.

**UNIT IV** **9**  
Arrays - Working with functions – structures – character strings – pre processor.

**UNIT V** **9**  
Pointers – Dynamic memory allocation – linked list - Applications

**TOTAL: 45 PERIODS**

### TEXT BOOKS

1. Peter Norton, “Introduction to Computers”, Sixth Edition, Tata McGraw Hill, 2007.
2. Stephen G. Kochan, “Programming in C”, Third Edition, Pearson Education, 2007.

### REFERENCES

1. Kernighan,B.W and Ritchie,D.M, “The C Programming language”, Second Edition, Pearson Education, 2006
2. Ashok N. Kamthane, “Computer programming”, Pearson Education, 2007.
3. Kenneth A. Reek, “Pointers on C”, Pearson Education, 2007.
4. Dromey,R.G, “How to solve it by Computer”, Pearson Education, 2007.

**PH 9112** **PHYSICS LABORATORY** **L T P C**  
**(Common to ALL Branches of B.E. / B.Tech. Programmes)** **0 0 2 1**

1. Torsional Pendulum- Determination of rigidity modulus of wire and moment of Inertia of disc.
2. Non-uniform bending - Determination of Young’s modulus.
3. Lees’ disc- Determination of thermal conductivity of a bad conductor.
4. Potentiometer - Determination of thermo e.m.f of thermocouple
5. Air wedge- Determination of thickness of a thin sheet of paper.
6. i. Optical fibre - Determination of Numerical Aperture and acceptance angle  
ii. Compact disc - Determination of width of the groove using laser.

- |                          |                                                                              |
|--------------------------|------------------------------------------------------------------------------|
| 7. Acoustic grating -    | Determination of velocity of ultrasonic waves in liquids.                    |
| 8. Post office box -     | Determination of Band gap                                                    |
| 9. Spectrometer -        | Determination of wavelength using grating                                    |
| 10. Viscosity of liquid- | Determination of co-efficient of viscosity of a liquid by Poiseuille's flow. |

**TOTAL: 30 PERIODS**

<b>CY9112</b>	<b>CHEMISTRY LABORATORY</b>	<b>L T P C</b>
	<b>(Common to all branches of Engineering and Technology)</b>	<b>0 0 2 1</b>

**I. WEIGHING AND PREPARATION OF STANDARD SOLUTIONS**

- i) Preparation of molar and normal solutions of the following substances oxalic acid, sodium carbonate, sodium hydroxide, and hydrochloric acid.
- ii) Preparation of buffer solutions: borate buffer, phosphate buffer using Henderson equation.

**2. WATER ANALYSIS**

- i) Determination of total hardness, temporary & permanent hardness of water by EDTA method.
- i) Determination of DO content by Winkler's method.
- ii) Determination of alkalinity in a water sample.
- iii) Determination of chloride content of water sample by argentometric method.

**3. PH-METRY**

To find out the strength of given hydrochloric acid by sodium hydroxide.

**4. CONDUCTOMETRY**

- i) Conductometric titration of mixture of acids
- ii) Conductometric precipitation titration using  $\text{BaCl}_2$ -  $\text{Na}_2\text{SO}_4$

**5. POTENTIOMETRY**

- i) Redox titration – Iron Vs. dichromate

**6. SPECTROPHOTOMETRY**

- i) To determine  $\lambda_{\text{max}}$  of a colored solution such as potassium permanganate.
- ii) To determine the iron content of an unknown solution (1,10- phenanthroline/ thiocyanate method)

**7. FLAME PHOTOMETRY**

- i) To determine sodium and potassium in water.

**8. VISCOMETRY**

- i) Determination of molecular weight of a polymer

**9. WATER POLLUTION**

- i) COD analysis of a waste water by dichromate method.

**10. KINETICS**

- i) Determination of reaction rate constant of acid catalyzed hydrolysis of ester.

**11. ADSORPTION**

- i) Adsorption of acetic acid on activated charcoal.

**TOTAL: 30 PERIODS**

**REFERENCE BOOKS**

1. A text of quantitative Inorganic Analysis, A. L. Vogel , ELBS London. 1995.
2. Experiments in physical chemistry, D.P. Shoemaker and C.W. Gardad, McGraw Hill, London, 2001.

**GE 9113**

**ENGINEERING PRACTICES LABORATORY**  
**(Common to all Branches of B.E. / B.Tech. Programmes)**

**L T P C**  
**0 0 3 2**

**OBJECTIVE**

To provide exposure to the students with hands-on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.

**GROUP – A (CIVIL & ELECTRICAL)**

**1. CIVIL ENGINEERING PRACTICE**

**12**

**Plumbing**

Basic pipe connections involving the fittings like valves, taps, coupling, unions, reducers, elbows and other components used in household fittings. Preparation of plumbing line sketches.

Laying pipe connection to the suction side of a pump – inlet.

Laying pipe connection to the delivery side of a pump – out let.

Practice in mixed pipe connections: Metal, plastic and flexible pipes used in household appliances.

**Wood Work**

Sawing, planing and making common joints: T-Joint, Mortise and Tennon joint, Dovetail joint.

### **Study**

Study of joints in door panels, wooden furniture

Study of common industrial trusses using models.

## **2. ELECTRICAL ENGINEERING PRACTICE 9**

Basic household wiring using switches, fuse, indicator – lamp etc.,

Preparation of wiring diagrams

Stair case light wiring

Tube – light wiring

Study of iron-box, fan with regulator, emergency lamp

## **GROUP – B (MECHANICAL AND ELECTRONICS) 15**

## **3. MECHANICAL ENGINEERING PRACTICE**

### **Welding**

Arc welding of butt joints, lap joints, tee joints

Gas welding Practice.

Basic Machining

Simple turning, drilling and tapping operations.

Machine assembly Practice.

Study and assembling the following:

Centrifugal pump, mixies and air conditioners.

Demonstration on

(a) Smithy operations like the production of hexagonal bolt.

(b) Foundry operation like mould preparation for grooved pulley.

#### 4. ELECTRONIC ENGINEERING PRACTICE

9

Soldering simple electronic circuits and checking continuity.

Assembling electronic components on a small PCB and testing.

Study of Telephone, FM radio, low-voltage power supplies.

**TOTAL: 45 PERIODS**

**GE 9114                      COMPUTER PRACTICE LABORATORY                      L T P C**  
**(Common to all branches of B.E. / B.Tech. Programmes)    0 0 3 2**

#### **AIM:**

The aim is to teach the use of computer applications related to office automation and to teach implementation of C programs.

#### **OBJECTIVES:**

- To introduce office automation software packages.
  - To teach the fundamentals in C programming.
1. Simple OS commands and simple editors for file operations.
  2. Word processors for more complex operations, like formatting documents, creating tables and so on.
  3. Simple data base packages for creating and manipulating databases.
  4. Spread sheet packages for data preparation and analysis.
  5. Preparation of reports involving mathematical functions (Income Tax Statement, Mark sheets, Payroll etc.,)
  6. C Programs using one dimensional arrays.
  7. C Programs using multi-dimensional arrays and pointer data types.
  8. Programs using structures, nested structures and union.
  9. Programs using functions- recursive, non-recursive and Library functions.
  10. Programs for passing aggregate data types as parameters between functions.

11. Programs for dynamic memory allocation / deallocation.
12. Programs for self-referential structure – Implementing linked list.

**TOTAL: 45 PERIODS**

<b>HS 9161</b>	<b>TECHNICAL ENGLISH II</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	(For all branches of B.E. / B.Tech. Programmes)	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>

**AIM:**

To help students specialising in the field of Engineering and Technology develop their proficiency in oral and written communication in Technical English.

**OBJECTIVES:**

- To enable students develop their critical thinking skills.
- To enable students develop higher order reading skills such as interpreting, evaluating and analysing.
- To enable students develop their active listening skills.
- To enable students participate successfully in Group Discussions.

**UNIT I** **6**  
 Word formation using prefixes ‘self’ – modified cloze – contextual meanings - Sequencing words - future simple passive form - Predicting content – Intensive reading – interpreting advertisements – Listening and completing table – Writing extended definition – describing a process using sequence words – developing ideas into paragraphs – writing about the future.

**UNIT II** **6**  
 Identifying objects and their use – word puzzles using words with suffixes – Prepositions – adverbs – structures that express purpose - adjectives – group discussion – Reading - skimming for content and analysis of style – modes of non verbal communication – Listening and categorising data in tables – Writing formal letter – writing paragraphs on various issues.

**UNIT III** **6**  
 Stress and intonation - Cause and effect expressions - Tense forms - simple past and past continuous - Different grammatical forms of the same word - Critical reading - guided note-making and evaluating content - Listening – guided note-taking – completing a table – Role-play – group discussion techniques - discussing an issue – offering suggestions – Sequencing jumbled sentences using coherence markers– Writing a report – Writing recommendations – Writing a letter of complaint.

**UNIT IV** **6**  
 Numerical adjectives - Prepositions – use of intensifying prefixes – phrasal verbs - different grammatical forms of the same words – cloze exercise - Reading a text and evaluating the content - advertisements – analysing style and language - Listening and

entering classified information – Intensive listening and completing the steps of a process - Role-play - Group discussion expressing opinions and convincing (agreeing and disagreeing) - Giving oral instructions – Descriptive writing - writing based on hints – writing argumentative paragraphs – formal letter writing – letter of application with biodata / CV Writing safety instructions - warnings and notices – preparing checklist – email communication.

## **UNIT V**

**6**

Identifying problems, their causes and finding solutions using case studies – creative and critical thinking – levels of thinking – thinking strategies – brainstorming - analytical reasoning skills – evaluative essay – decision making – conflict resolution

### **English Language Lab**

**(30 Periods)**

**1. Listening: (10)**

Recognising English sounds – accents - listening & answering questions - gap filling - listening & note making - listening to telephonic conversations - listening to speeches.

**2. Speaking: (10)**

Pronouncing words & sentences correctly - word stress - conversation practice.

**3. Reading: (5)**

Cloze test - Reading and answering questions - sequencing of sentences.

**4. Writing: (5)**

Correction of errors - Blogging.

**TOTAL : 60 PERIODS**

### **TEXTBOOK**

1. Department of Humanities & Social Sciences, Anna University. English for Engineers and Technologists, Combined edition Vols. I & II. Chennai: Orient Longman, Pvt. Ltd. 2006, Themes 5 to 8 (for Units 1 – 4)
2. Sunita Mishra & C. Muralikrishna, Communication Skills for Engineers, Pearson Education, Second Impression, 2007. ( for Unit 5)

### **REFERENCES**

1. Ashraf, R.M, Effective Technical Communication, New Delhi: Tata McGraw Hill, 2007.
2. Thorpe, E & Thorpe, S, Objective English, New Delhi : Pearson Education, 2007.
3. Joan Van, Emden, A Handbook of writing for Engineers, Cambridge University Press, 1997
4. Website: [www.englishclub.com](http://www.englishclub.com)



## LAB REQUIREMENTS

1. Teacher – Console and systems for students
2. English Language Lab Software
3. Tape Recorders

**MA 9161**

**MATHEMATICS - II**  
**(Common to all branches of B.E. / B.Tech Programmes)**

**L T P C**  
**3 1 0 4**

### AIM:

To introduce the effective mathematical tools needed for solving engineering problems and to emphasize the underlying mathematical principles in specific situations confronting practicing engineers.

### OBJECTIVES:

- To make the student acquire sound knowledge of techniques in solving ordinary differential equations that model engineering problems
- To acquaint the student with the concepts of vector calculus, needed for problems in all engineering disciplines
- To develop an understanding of the standard techniques of complex variable theory so as to enable the student to apply them with confidence, in application areas such as heat conduction, elasticity, fluid dynamics and flow the of electric current
- To make the student appreciate the purpose of using transforms to create a new domain in which it is easier to handle the problem that is being investigated

**UNIT I DIFFERENTIAL EQUATIONS 9+3**  
Method of variation of parameters – Method of undetermined coefficients – Homogenous equation of Euler’s and Legendre’s type – System of Simultaneous linear differential equations with constant coefficients.

**UNIT II VECTOR CALCULUS 9+3**  
Gradient and directional derivative – Divergence and Curl – Irrotational and Solenoidal vector fields – Line integral over a plane curve – Surface Integral and Volume Integral - Green’s, Gauss divergence and Stoke’s theorems – Verification and Application in evaluating line, surface and volume integrals.

**UNIT III ANALYTIC FUNCTION 9+3**  
Analytic functions – Necessary and sufficient conditions for analyticity - Properties – Harmonic conjugates – Construction of analytic function - Conformal Mapping – Mapping by functions  $w = z+c$ ,  $az$ ,  $\frac{1}{z}$ ,  $z^2$  - Bilinear transformation.

**UNIT IV COMPLEX INTEGRATION 9+3**  
Line Integral - Cauchy’s theorem and integral formula – Taylor’s and Laurent’s Series – Singularities – Residues – Residue theorem – Application of Residue theorem for

evaluation of real integrals – Use of circular contour and semicircular contour with no pole on real axis.

**UNIT V LAPLACE TRANSFORMS 9+3**

Existence conditions – Transforms of elementary functions – Basic properties – Transforms of derivatives and integrals – Initial and Final value theorems – Inverse transforms – Convolution theorem – Transform of periodic functions – Application to solution of linear ordinary differential equations with constant coefficients.

**L: 45, T: 15, TOTAL : 60 PERIODS**

**TEXT BOOKS**

1. Grewal, B.S. “Higher Engineering Mathematics”, Khanna Publications (2007)
2. Ramana, B.V. “Higher Engineering Mathematics” Tata McGraw Hill (2007).

**REFERENCES**

1. Glyn James, “Advanced Modern Engineering Mathematics, Pearson Education (2007)
2. Jain R.K. and Iyengar S.R.K., Advanced Engineering Mathematics (3<sup>rd</sup> Edition) Narosa Publications, Delhi (2007).

**PH9168 PHYSICS FOR COMMUNICATION ENGINEERING  
(Common to Electronics and Communication Engg., Computer Science and Engg.  
and Information Technology)**

**L T P C  
3 0 0 3**

**OBJECTIVE:**

To introduce the essential principles of physics for communication and related engineering applications.

**UNIT I ELECTRICAL PROPERTIES OF METALS 9**

Classical theory: Drude model - thermal conductivity, thermal resistance - electrical conductivity of nonmetals: semiconductors, ionic crystals and glasses - thin metal films: conductivity and resistivity - Schrödinger wave equation – particle in a box – degenerate states – Fermi-Dirac statistics – density of states: electron concentration and Fermi Level - band theory of solids: energy band formation – electron effective mass.

**UNIT II SEMICONDUCTORS 9**

Intrinsic semiconductors: energy band-diagram - direct and indirect band gap semiconductors - carrier concentrations and conductivity - extrinsic semiconductors: n, p-type doping, compensation doping - temperature dependence of conductivity - degenerate and nondegenerate semiconductors - recombination and minority carrier injection: direct and indirect recombination - minority carrier lifetime - diffusion and conduction equations and random motion - continuity equation: time-dependent continuity equation, steady-state continuity equation - optical absorption - Hall effect and





- Ashok Gupta, Interactive Engineering Mechanics – Statics – A Virtual Tutor (CDROM), Pearson Education Asia Pvt., Ltd., 2002
- J.L. Meriam & L.G. Kraige, Engineering Mechanics Vol. I & Vol. II, V edition, John Wiley & Sons, 2006.
- P. Boreasi & J. Schmidt, Engineering Mechanics Statics & Dynamics, Micro Print Pvt. Ltec., Chennai, 2004.

**EC 9161**

**ELECTRONIC DEVICES AND CIRCUITS**

**L T P C  
3 0 0 3**

**UNIT I VOLTAGE AND CURRENT LAWS 9**  
Nodes, Paths, Loops, and Branches; Kirchoff's Current Law, Kirchoff's Voltage Law, Single Loop Circuit, Single Node-Pair Circuit, Series and Parellel Connected Independent Sources, Resistors in Series and Parellel, Voltage and Current Division

**UNIT II CIRCUIT ANALYSIS TECHNIQUES 9**  
Linearity and Superposition, Sources Transformation, Thevinin and Norton Equivalent Circuits, Maximum Power Transfer, Delta-Wye Conversion, Single Phase and 3 Phase Circuits-Power Factor-Power-Concept of Phasor Diagrams.

**UNIT III SEMICONDUCTOR DEVICES 9**  
PN-Junction Diode- Drift and Diffusion Current-Zener Diode-Zener Regulator-BJT-V-I Charecteristics-CE Configuration-Current Equation h-Parameter Model.JFET- V-I Charesteristics- Current Equation- Transconductance MOSFET-Types DMOS, EMOS – V-I Charesteristics-Moll Current Equation Equalitine Treatment only.

**UNIT IV RECTIFIER, AMPLIFIER AND OSCILLATOR 9**  
FWR-Filter-Capacitors Input Filter-Choke Input Filter – CE Amplification with and without feedback – Analysis and Frequency Response – CS MOSFET Amplifier - Analysis

**UNIT V OPERATIONAL AMPLIFIER 9**  
Introduction of an Inverting Amplifier, Non Inverting Amplifier, Basic Application of Operation Amplifier: Subractor, Summing Amplifier, Digital to Analogue nvertor, Low Pass Filter, First Order Low Pass Filter, First Order High Pass Filter, Integrator, Differentiator.

**TOTAL: 45 PERIODS**

**TEXT BOOKS**

- David A.Bell 'Electronic Devices and Circuit/ -Oxford press-2008.
- Robert T.Paynter Introductory Electronic Devices and Circuits – Pearson Education-Sixth Edition

**REFERENCES**

- Denal A.Neamar, Electronic Circuit Analysis and Design – Second Edition – Tata MCGraw Hill, 2002.
- Adel S.Sedia Keanath Cswith Micro Electronic Circuit-Fourth Edition-Oxford University Press-1998.

**AIM:**

The aim is to review the basics of C programming and to introduce the concepts of Data Structures.

**OBJECTIVES:**

- To introduce the basics of C programming language.
- To introduce the concepts of ADTs.
- To introduce the concepts of Hashing and Sorting.

**UNIT I****8**

Programming Style: Names – Expressions and Statements – Consistency and Idioms – Function Macros – Magic Numbers – Comments – Review of C Programming: Types, Operators and Expressions – Control Flow – Functions and Program Structure

**UNIT II****8**

C Programming: Pointers and Arrays – Structures – Input and Output - Files – Preprocessor.

**UNIT III****10**

Lists, Stacks, and Queues: Abstract Data Types (ADTs) – List ADT – Stack ADT – Queue ADT

**UNIT IV****9**

Trees: Preliminaries – Binary Trees – Search Tree ADT – Binary Search Trees – Hashing: ADT – Hash Function – Separate Chaining – Open Addressing – Rehashing – Extendible Hashing

**UNIT V****10**

Sorting: Insertion Sort – Shell Sort – Heap Sort – Merge Sort – Quick Sort – External Sorting

**TOTAL: 45 PERIODS****TEXT BOOKS**

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2<sup>nd</sup> ed., Pearson Education, 1988. (Units 1 and 2)
2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", 2<sup>nd</sup> ed., Pearson Education, 1997. (Units 3, 4, 5)

**REFERENCES**

1. Brian W. Kernighan and Robert Pike, "The Practice of Programming", Pearson Education, 1999.
2. Aho, Hopcroft and Ullman, "Data Structures and Algorithms", Pearson Education, 1983.
3. Stephen G. Kochan, "Programming in C", 3<sup>rd</sup> ed., Pearson Education, 2005.
4. Herbert Schildt, "C: The Complete Reference", 4<sup>th</sup> ed., Tata McGraw-Hill, 2000.
5. Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J. Augenstein, "Data Structures using C", Pearson Education, 1998.

6. Robert Kruse, C.L. Tondo, Bruce Leung, "Data Structures, Program Design in C", 2<sup>nd</sup> ed., Pearson Education, 1997.

**EC9167**

**ELECTRONIC DEVICES AND CIRCUITS LAB**

**L T P C**  
**0 0 3 2**

1. PN Junction Diode Characteristics
2. Zener Diode Characteristics
3. HalfWave and FullWave Rectifier
4. Zener Regulator
5. CE Transistor Characteristics
6. UJT Characteristics
7. 00000.FET Characteristics
8. SCR Characteristics
9. Frequency Response of CE, CB, and CC Amplifier with self-bias, fixed bias and controller to Feedback bias
10. Application of 555 Timer
11. Verification of Kirchoff's Laws and Network Theorem
12. Applications of Operational Amplifier
13. RC and LC Oscillators
14. Coupled Circuits

**TOTAL: 45 PERIODS**

1. Programs for Control Structures, Arrays, and Functions.
2. Programs using pointers.
3. Programs using structures.
4. Programs using file IO and preprocessing.
5. Array implementation of List Abstract Data Type (ADT)
6. Linked list implementation and cursor implementation of List ADT
7. Stack ADT – Array and linked list implementations
8. Implement any Stack application using an appropriate header file for the Stack ADT, a separate source file for the array implementation of the Stack ADT, and a separate source file for the application. Use the linked list implementation instead of the array implementation, keeping the other files the same.
9. Implement source files for other applications of the Stack ADT and use the array and linked list implementations interchangeably.
10. Implement the Queue ADT in different ways and use it for different applications.
11. Search ADT using different implementations including Sorted Link List, Binary Search Tree hashing, and different applications.
12. Sorting

**TOTAL: 45 PERIODS**