

ANNA UNIVERSITY : : CHENNAI – 600 025

UNIVERSITY DEPARTMENTS

R - 2008

B.E.COMPUTER SCIENCE AND ENGINEERING

I & II SEMESTERS CURRICULUM AND SYLLABI

SEMESTER - I

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

SEMESTER II

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
HS 9161	Technical English II	2	0	2	3
MA 9161	Mathematics II	3	1	0	4
PH 9168	Physics for Communication Engineering	3	0	0	3
GE9151	Engineering Mechanics	3	0	0	3
CS 9151	Programming and Data Structures I	3	0	0	3
CS 9152	Digital Principles and System Design	3	1	0	4
PRACTICAL					
CS 9153	Programming and Data Structures Laboratory I	0	0	3	2
CS 9154	Digital Systems Laboratory	0	0	3	2
	TOTAL	17	2	8	24

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

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

adsorption chromatography – Catalysis – classification – characteristics of catalysis - auto catalysis – enzyme catalysis – Michaelis – Mention equation – solid acid catalysis.

UNIT IV ORGANIC REACTIONS AND SPECTROSCOPY 9

Electrophilic and nucleophilic, substitution and elimination reactions mechanisms – SN¹, SN², E¹, E² reactions – Electromagnetic spectrum – absorption of radiation – electronic transition – vibrational transition – rotational transition – intensities of spectral lines – beer-lamberts 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 L T 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 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, 46th 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

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

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

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Torsional Pendulum- 2. Non-uniform bending - 3. Lees' disc- 4. Potentiometer 5. Air wedge- 6. i. Optical fibre ii. Compact disc - 7. Acoustic grating - 8. Post office box - 9. Spectrometer - 10. Viscosity of liquid- | <ol style="list-style-type: none"> Determination of rigidity modulus of wire and moment of Inertia of disc. Determination of Young's modulus. Determination of thermal conductivity of a bad conductor. - Determination of thermo e.m.f of thermocouple Determination of thickness of a thin sheet of paper. - Determination of Numerical Aperture and acceptance angle Determination of width of the groove using laser. Determination of velocity of ultrasonic waves in liquids. Determination of Band gap Determination of wavelength using grating Determination of co-efficient of viscosity of a liquid by Poiseuille's flow. |
|--|---|

TOTAL: 30 PERIODS

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 BaCl_2 - Na_2SO_4

5. POTENTIOMETRY

- i) Redox titration – Iron Vs. dichromate

6. SPECTROPHOTOMETRY

- i) To determine λ_{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, planning 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

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

HS 9161

TECHNICAL ENGLISH II
(For all branches of B.E. / B.Tech. Programmes)

L T P C
2 0 2 3

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

LAB REQUIREMENTS

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

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 (3rd Edition) Narosa Publications, Delhi (2007).

PH9168

PHYSICS FOR COMMUNICATION ENGINEERING

(Common to Electronics and Communication Engg., Computer Science and Engg. and Information Technology)

**LT 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 devices - Ohmic contacts - Schottky diode and solar cell.

4. J.L. Meriam & L.G. Kraige, Engineering Mechanics Vol. I & Vol. II, V edition, John Wiley & Sons, 2006.
5. P. Boreasi & J. Schmidt, Engineering Mechanics Statics & Dynamics, Micro Print Pvt. Ltec., Chennai, 2004.

CS 9151

PROGRAMMING AND DATA STRUCTURES I

L T P C
3 0 0 3

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", 2nd ed., Pearson Education, 1988. (Units 1 and 2)
2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", 2nd ed., Pearson Education, 1997. (Units 3, 4, 5)

TEXT BOOK

1. M. Morris Mano, "Digital Design", IV edition, Pearson Education, 2006.

REFERENCES

1. Charles H.Roth Jr, "Fundamentals of Logic Design", V edition – Jaico Publishing House, Mumbai,2003.
2. Donald D. Givone, "Digital Principles and Design", Tata MCGraw Hill, 2003.

CS 9153 PROGRAMMING AND DATA STRUCTURES LABORATORY I L T P C 0 0 3 2

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

CS 9154 DIGITAL SYSTEMS LABORATORY L T P C 0 0 3 2

AIM:

To Provide hands on experience in designing, building and testing digital circuits

OBJECTIVES :

- To construct digital circuits using standards ICs and testing boards
- To study pin details, and internal logic of standards ICs and testing ICs.
- To implement and verify combinational circuits.
- To implement and verify sequential circuits like shift registers and counters.
- To design simple digital system using the above concepts.

1. Verification of Boolean Theorems using basic gates.
2. Design and implementation of combinational circuits using basic gates for arbitrary functions, code converters.
3. Design and implementation of combinational circuits using MSI devices.
 - 4 – bit binary adder/subtractor
 - Parity generator/checker
 - Magnitude Comparator
 - Application using multiplexers
4. Design and implementation of sequential circuits.
 - Shift –registers
 - Synchronous and asynchronous counters
5. Coding combinational/sequential circuits using HDL
6. Design and implementation of a simple digital system.
(Such as * Sequential adder
* Binary multiplier
* Data Transmission
* Ping – Pong game etc.)

TOTAL: 45 PERIODS