VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD - 31

DEPARTMENT OF COMPUTER APPLICATIONS

MCA I Year (I & II Semesters)

COURSE STRUCTURE & SYLLABUS

(BoS Approved on 22/12/14)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO OSMANIA UNIVERSITY & ACCREDITED BY A.I.C.T.E)

DEPARTMENT OF COMPUTER APPLICATIONS

IBRAHIMBAGH, HYDERABAD – 500 031

www.vce.ac.in

VASAVI COLLEGE OF ENGINEERING (AUTONOMUS), HYDERABAD – 31

DEPARTMENT OF COMPUTER APPLICATIONS

Department – VISION

To enable students to achieve excellence in computational skills embedded with human values.

MCA PROGRAM – MISSION

To imbibe technical competence for developing innovative solutions and new applications in computer science, there by transforming them as better professionals.

MCA PROGRAM – PROGRAM EDUCATIONAL OBJECTIVES (PEOS):

1. To gain knowledge and proficiency for analysis, design and problem solving, to have a successful career in industry and for higher studies.

2. To promote application of technical knowledge coupled with project management abilities.

3. To imbibe leadership qualities with professional ethics and communication skills.

4. To provide positive attitude for lifelong learning.

MCA PROGRAM – PROGRAM OUTCOMES (POs):

a. An ability to apply knowledge in computer applications to become successful professionals.

b. An ability to develop logic and understand the essential mathematics related to Information Technology.

c. An ability to Design, implement, and evaluate a software product.

d. An ability to apply skills for solving technical problems in software development.

e. An ability to familiarize with emerging & advanced software tools.

f. An ability to experience the industrial environment for understanding the impact of computational solutions in a global & societal context.

g. An ability to analyse the knowledge of contemporary issues.

h. An ability to apply professional ethics.

i. An ability to get readiness to collaborate in a multi-disciplinary team.

j. An ability to communicate effectively.

k. An ability to participate in life-long learning.

l. An ability to handle the projects through appropriate project management techniques.

CONTENTS

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD-31
## DEPARTMENT OF COMPUTER APPLICATIONS

SCHEME OF INSTRUCTION & EXAMINATION

MCA I YEAR I-Semester

Sl. No.	Syllabus Ref. No.	SUBJECT	Scheme of Instruction Periods per week			Scheme of Examination End Sem Exam hrs	Maximum Marks		Credits
			L	T	P		End Sem Exam	Sessi-onals	
I YEAR I SEMESTER									
1	HS 5010	Communicative English - I	2	- .	-	2	35	15	2
2	CA 5020	Discrete Mathematics	4	1	-	3	70	30	3
3	HS 5030	Managerial Economics and Accountancy	4	1	-	3	70	30	3
4	CA 5040	Computer Programming and Problem Solving	4	1	-	3	70	30	3
5	CA 5050	Management Information Systems	4	1	-	3	70	30	3
6	CA 5060	Computer Organization	4	1	-	3	70	30	3
Practicals									
7	HS 5311	English Language Training Lab – I	-	-	2	2	25	25	1
8	CA 5321	Programming Lab-I (C&C++ Lab)	-	-	9	3	50	25	3
9	CA 5331	Programming Lab-II (EIT Lab)	-	-	3	3	50	25	2
		TOTAL	22	05	14	25	510	240	23

Head of the Department

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HS 5010
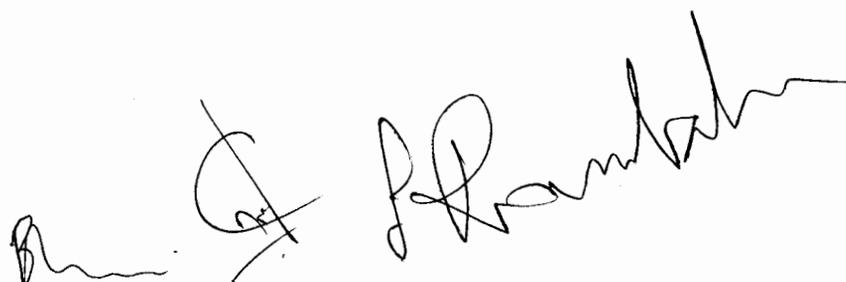
COMMUNICATIVE ENGLISH - I

Lecture	: 2 Hrs/Week	**Internal Assessment**	: 15
Tutorial	: -	**End Sem Exam**	: 35
Practical	: -	**Credits**	: 02

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Explain the importance of communication in English.
2. Listen for relevant details and filter distractions.
3. Use strategies in speaking and writing to enhance their success at the interpersonal level.
4. Read and understand various types of texts and react accordingly.
5. Use grammar and vocabulary accurately in various contexts.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Overcome barriers to communication to a large extent.
2. Respond to communication in given contexts appropriately.
3. Use the functional aspects of grammar to interact effectively in different situations.
4. Read for gist and details with ease and produce that into appropriate writing.
5. Apply relevant vocabulary in writing paragraphs, letters and reports.

COURSE CONTENTS:

UNIT – 1 : Importance of Communication- barriers to communication- surmounting the barriers- awareness of non- verbal communication

UNIT – 2: Listening Skills – sub-skills of listening - Barriers to Listening - strategies for effective listening- Practice Tests (with Audio/ Visual)

UNIT – 3 : Oral Communication – speaking skills and strategies for general conversations and public Speaking - Situational Dialogues - Public Speaking Skills – Conditional Sentences and responses– Self Introduction in given contexts – Functional Grammar & Usage – Roots, Prefixes and Suffixes – tenses - question tags – articles - prepositions - active-passive voice- Words often mis-spelt or confused – Mispronounced words – Practice Sessions- Practice Sessions - Tests.

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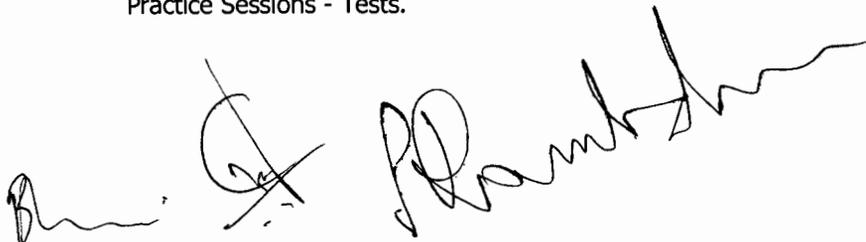
UNIT – 4 : Reading skills- reading for gist/ for details/ guessing meaning from context- importance of loud reading and silent reading.

UNIT – 5 : Writing Skills – Paragraph Writing – Letter Writing – Email Writing – Punctuation – Sentence Usage to improve writing skills –types of sentences- Practice Sessions – Tests

LEARNING RESOURCES:

Prescribed textbook :

Technical communication – Principles and Practice (2nd Edition 2014) – Meeenakshi Raman and Sangeeta Sharma – Oxford University Press

Reference Books:
1. Teaching listening comprehension, Penny ur, CUP
2. Teaching reading as a foreign language, Christine Nuttal, Macmillan
3. Essential Business grammar and practice, Michael Duckworth, OUP
4. Activities using Resources, Heather Westrop, Ioanna Baker, OUP
5. Business vocabulary in use, Bill Mascal, CUP
6. Oxford practice grammar (with CD-Rom John Eastwood (Intermediate),OUP

CA - 5020

DISCRETE MATHEMATICS

Lecture	: 4 Hrs/Week	**Internal Assessment** : 30
Tutorial	: 1 Hrs/Week	**End Sem Exam** : 70
Practical	: -	**Credits** : 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. To introduce a number of Discrete Mathematical Structures (DMS) found to be serving as tools even today in the development of theoretical computer science.

2. Course focuses on of how Discrete Structures actually helped computer engineers to solve problems occurred in the development of programming languages.

3. Also, course highlights the importance of discrete structures towards simulation of a problem in computer science and engineering.

4. Introduction of a number of case studies involving problems of Computer Technology.

COURSE OUTCOMES:

Upon successful completion of this course, students will:

1. Construct mathematical arguments using logical connectives and quantifiers.

2. Verify the correctness of an argument using propositional and predicate logic and truth tables.

3. Perform operations on discrete structures such as sets, functions, relations.

4. Demonstrate the ability to solve problems using counting techniques.

5. Apply algorithms to solve problems in elementary number theory.

6. Solve problems involving recurrence relations and generating functions.

7. Use graphs and trees as tools to visualize and simplify situations.

COURSE CONTENTS:

UNIT - I

Fundamentals of Logic: Basic Connectives and Truth Tables, Logical Equivalence, Logical Implication, Use of Quantifiers, Definitions and the Proof of Theorems.

Boolean Algebra: Switching Functions, Logic gates, Don't Care Condition.
Set Theory: Sets and Subsets, Set operations and the Laws of Set theory, Counting and Venn Diagrams.
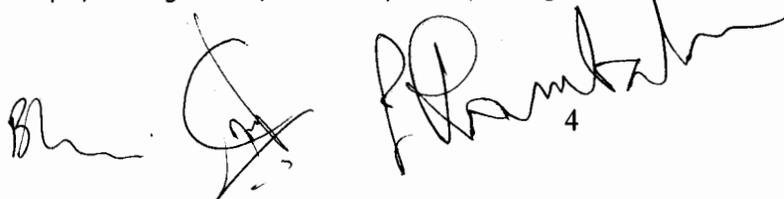
UNIT –II

Properties of Integers: The well-ordering principle, Recursive definitions, The Division Algorithm, Euclidean Algorithm, Fundamental theorem of arithmetic.

Functions: Cartesian Product, Functions, Onto Functions, Special Functions, Pigeonhole Principle, Composition and Inverse Functions, Computational Complexity.
Relations: Partial Order Relations, Lattices, Equivalence Relations and Partitions.

UNIT – III

Principle of Inclusion and Exclusion: Principles of Inclusion and Exclusion, Generalization of principle, Derangements, Rooks Polynomial, Arrangements with Forbidden Positions.

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Generating Functions: Introductory examples, Definitions and examples. Partition of Integers, Exponential generating function, Summation operator.

UNIT - IV

Recurrence Relations: First-order linear recurrence relation, Second-order linear homogeneous recurrence relations with constant coefficients, Non-homogeneous recurrence relations, Divide-and-conquer algorithms.

Algebraic Structures: Definition, Examples and properties.
Groups: Definition, Examples and elementary properties, Homomorphism, Isomorphism and Cyclic groups.

UNIT – V

Graph Theory: Definitions and examples, Subgraphs, Complements and graph isomorphism, Vertex degree, Planar graphs: Hamiltonian paths and Cycles, Graph coloring.

Trees: Definitions, Properties and examples, Rooted Trees, Spanning Trees and Minimum Spanning Trees.

LEARNING RESOURCES:

Text Books:

1. Ralph P.Grimaldi, "Discrete and Combinatorial Mathematics", Pearson Education, 4th Edition, 2003.

Reference Books:

1. Kenneth H Rosen, "Discrete Mathematics and its Applications" Tata McGraw Hill, 6th Edition, 2007.
2. J.P.Tremblay & R.Manohar, "Discrete Mathematical Structures with Applications to Computer science", Mc Graw Hill, 1987.
3. Joe L.Mott, A.Kandal & R. Manohar, "Discrete Mathematics for Computer scientists, & Mathematicians", Prentice Hll N.J., 1986.
4. Kevin Ferland, "Discrete Mathematics", Houghton Mifflin Company, 2009.

Web Resources:

1. http://nptel.iitm.ac.in

HS - 5030

MANAGERIAL ECONOMICS AND ACCOUNTANCY

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. to create an awareness about the significance of economics in day to day life and the impact of the policies on organizations' performance
2. enable the students to engineer the products according to the societal needs
3. help them in leaning the techniques in making investment decisions
4. to make them understand the economical ways of production
5. to teach the process of assessing the performance of companies

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. makes them more competent to make decisions in solving the economic problems of the organization
2. make economical production for better profits
3. analyse the past performance of the company and make decisions for future
4. competent to identify the optimum combination of inputs and also set up their own enterprise.

COURSE CONTENTS:

UNIT - I

Meaning and Nature of Managerial Economics: Managerial Economics its usefulness to Engineers, Fundamental Concepts of Managerial Economics, Scarcity, Marginalism, Equi-marginalism, opportunity costs, Discounting, Time Perspective, Risk and Uncertainty, Profits, Case study method.

UNIT - II

Consumer Behaviour: Law of Demand, Determinants, Kinds; Elasticity of Demand (Price, Income and Cross-Elasticity); Demand forecasting, Law of Supply, concept of Equilibrium. (Theory questions and small numerical problems can be asked).

UNIT - III

Theory of Production and Markets: Production Function, Law of Variable Proportion, ISOquants, Economics of Scale, Cost of Production (types and their measurement), Concept of Opportunity Cost, Concept of Revenue, Cost-Output relationship, Break-Even Analysis, Price-Output determination under Perfect Competition and Monopoly (theory and problems can be asked).

6

UNIT - IV

Capital Management: Its Significance, determination and estimation of fixed and working capital requirements, sources of capital, Introduction to capital budgeting, methods of payback and discounted cash flow methods with problems. (Theory questions and numerical problems on estimating working capital requirements and evaluation of capital budgeting opportunities can be asked).

UNIT - V

Book-Keeping: Principles and significance of double entry book keeping, Journal, Subsidiary books, Ledger accounts Trial Balance, Concept and preparation of Final Accounts with simple adjustments, Analysis and interpretation of Financial Statements through Ratios.
(theory questions and numerical problems on preparation of final accounts, cash book, petty cash book, bank reconciliation statement, calculation of some ratios).

LEARNING RESOURCES:

Text Books:

1. Mehta P.L., "Managerial Economics – Analysis, Problems and Cases", Sulthan Chand & Son's Educational publishers, 2011.
2. Maheswari S. N. "Introduction to Accountancy", Vikas Publishing House, 2005.
3. Panday I.M. "Financial Management" Vikas Publishing House, 2009.

Reference Books:

1. Micro Economics by M. L.Seth.
2. Financial Accounting by Jain & Narang.
3. Financial Management by Khan & Jain.
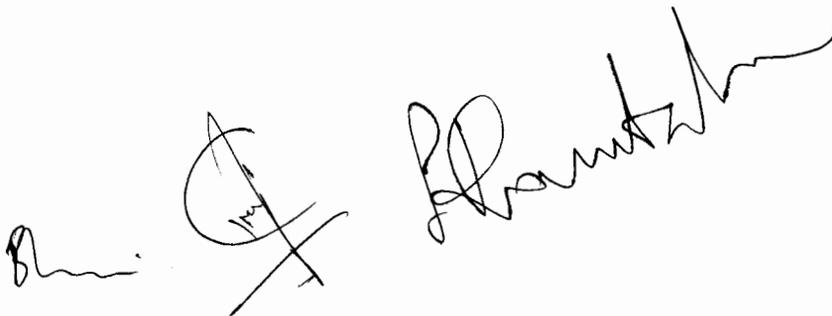
CA 5040

Computer Programming and Problem Solving

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives:

The course will enable the learners to:

1. Acquire the fundamental concepts of Problem solving and computer programming.
2. Describe the fundamentals of structured and object-oriented programming.
3. Apply the programming constructs of C and C++ programming languages.
4. Develop a structured and well-documented computer program in C/C++.

Course Outcomes:

At the end of the course the learners should be able to:-

1. Describe computing environment, analyze software development tools like algorithm etc. and implement basic constructs of Structured Programming Language C.
2. Apply Functions, Arrays and Pointers in C programs.
3. Illustrate Strings, Enumerated, Structure and Union Types, Text Input/ Output Files in C.
4. Explain Object Oriented Programming Approach and use Classes and Operator overloading in C++ programs.
5. Apply Inheritance, Virtual Functions, Stream Input/ Output, Templates, Exception Handling in C++ programs.

COURSE CONTENTS:

UNIT – I

Introduction to computers: Computer Systems, Computing Environments, Computer Languages, Creating and running programs, Software Development.

Introduction to C Language: Background, C programs, Identifiers, Types, Variables, Constants, Operators, Input/Output, Expressions, Precedence and Associativity, Side Effects, Evaluating Expressions, Type Conversion, Statements, Selection: making decisions, repetition.

UNIT – II

Functions: Designing Structured Programs, Functions in C, User-defined functions, Inter-function communication, Standard Functions, Scope, Recursion.

Arrays: Concepts, Using Arrays in C, Inter-function communication, Two Dimensional Arrays, Multidimensional Arrays. Application:- Linear, Binary Search, Selection, Bubble Sort and Insertion Sort.

Pointers: Introduction, Pointers for inter- function communication, pointers to pointers, Compatibility, LValue and RValue, Arrays and Pointers, Array of Pointers, Memory allocation functions.

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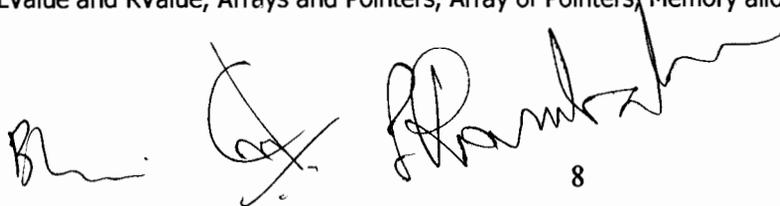
UNIT – III

Strings: Concepts, C strings, String Input/Output Functions, Arrays of Strings, String Manipulation functions.

Enumerated, Structure and Union Types: The Type definition, Enumerated types, Structures, Unions, Pre-Processor Directives.

Text Input/Output Files in C: Files, Streams, Standard Library Input/Output Functions, Formatting Input/Output Functions, Character Input/Output Functions.

UNIT – IV

Introduction to C++: Introduction, simple program, standard library, header files, inline functions, references and reference parameters, default arguments, empty parameter lists, unary, scope resolution operator, function overloading, function templates.

Classes and data abstraction: Class scope, accessing class members, interface, constructors, destructors, const objects and member functions, this pointer, new and delete operators, static class members.

Operator overloading: Fundamentals, restrictions, overloading unary / binary operators.

UNIT – V

Inheritance: Base and derived classes, casting base class pointers to derived class pointers, using member functions overriding, public, protected and private inheritance, constructors and destructors in derived classes.

Virtual Functions: Abstract base class, polymorphism, dynamic binding, virtual destructors.

Stream Input/Output: Streams, Stream Output, Stream Input

Templates: Introduction, class templates, templates and inheritance, templates and static members.

Exception Handling: Try, throw, catch.

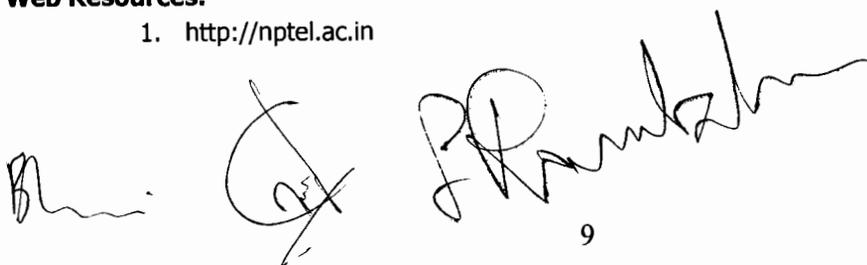## LEARNING RESOURCES:

Text Books:

1. Behrouz A. Forouzan, Richard F Gilberg, "Computer Science – A Structured Approach Using C", 3rd Edition, Cengage Learning 2007. (For Units I, II, III)
2. Walter Savitch, "Problem Solving with C++", 7th edition, Pearson Education Publishing, 2013. (For Units IV, V)

Reference Books:

1. Harry.H. Cheng, "C / C++ for Engineers and Scientist – An Interpretive Approach", TMH, 2010.
2. Ds. Malik, "C++ Programming Language", Cengage Learning, 2009.
3. Kernighan BW and Ritchie DM, "the C Programming Language", 2nd Edition, PHI, 2006.
4. Bjarne Stroustrup, "The C++ Programming Language", 3rd Edition, Pearson Education, 2000.
5. J.R. Hanly and E.B Koffman, "Problem Solving and Program Design in C", Pearson Education, 2007.

Web Resources:
1. http://nptel.ac.in

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CA - 5050

MANAGEMENT INFORMATION SYSTEMS

Lecture	: 4 Hrs/Week	**Internal Assessment** : 30
Tutorial	: 1 Hrs/Week	**End Sem Exam** : 70
Practical	: -	**Credits** : 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Understand various Levels of Information systems
2. Study various business processes in an organization.
3. Identify and address various issues of Information system Management.
4. Understand the impact of latest technologies on Information System management.
5. Aid decision making in development of Information system

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Interpret the role and use of technology in business systems and operations.
2. Identify and describe organizational structure and business processes within these structures.
3. Demonstrate an understanding of the process in systems design and development.
4. Describe Knowledge management in an organization.
5. Identify the security concerns in an Information System and illustrate the enterprise system.

COURSE CONTENTS:

UNIT - I
Meaning and Role of Information Systems – Definition of Information Systems, Types of Information systems. Their advantages and disadvantages. An Introduction to concepts of System and Organizations. Strategic Uses of Information Technology. Business Process in Engineering and Information Technology.

UNIT - II
Applications to Operational Information Systems to Business, Tactical and Strategic Information System to Business.

UNIT - III
Information Systems Planning, Approach to System Building, Alternative Application Development.

UNIT - IV
Managing Knowledge, Knowledge Management in the Organization, Enhancing Management Decision Making, DSS, GDSS, ESS.

UNIT - V
Management of Information Systems, Information System security and control, Ethical issues. Cyber crimes – Global Perspective, Managing Firm Infrastructure and Enterprise System. Introduction to E-commerce (what is e-commerce)
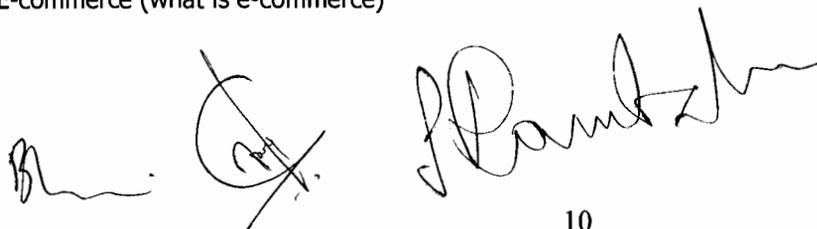
LEARNING RESOURCES:

Text Books:
1. Robert Schultheis, Mary Sumner, "Management Information Systems-The Manager's View", Tata McGraw Hill, 4th Edition, 1998.(UNIT-1,II ,III)

2. Kenneth C Laudon, Jane P Laudon "Management Information systems" Prentice Hall, 2000.(UNIT-IV,V)

Reference Books:

1. Ralph Stair, George Reynolds "Principles of Information systems", Cengage Learning 2008.

2. James A, O'Brien, "Management Information Systems", Tata McGraw Hill, Sixth Edition, 2004.
3. D. P. Goyal, "Management Information Systems-Managerial Perspective", Macmillan, 3rd Edition, 2010.(FOR CASE STUDIES)

Web Resources:

1. Lecture Series on Management Information System by Prof.Biswajit Mahanty, Department of Industrial Engineering and Management, IIT Kharagpur.(www.nptel.iitm.ac.in)
2. http://hbsp.harvard.edu/he-main/resources/documents/web-files/Turban_formatted1.pdf

CA - 5060

COMPUTER ORGANIZATION

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Describe the fundamentals of computer organization and its relevance to classical and modern problems of computer design
2. Acquire the knowledge of basic digital components and how to build simple logic circuits.
3. Explain about parallel processing and solve computer arithmetic problems.
4. List the importance of registers and explain how microoperations are performed.
5. Identify the fundamentals of how the CPU, I/O and Memory subsystems work.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Identify and explain about digital logic circuits, components and various data representations.
2. List and use the various register transfer microoperations and describe basic computer organization and design.
3. Write simple assembly language programs and describe micro programmed control.
4. Calculate effective address based on given addressing modes, illustrate issues in parallel processing and use basic computer arithmetic.
5. Explain the basic I/O activities and the Memory subsystem.

COURSE CONTENTS:

UNIT - I

Digital Logic Circuits: Digital Computers, Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuits, Flip Flops, Sequential Circuits.
Digital Components: Integrated Circuits, Decoder, Multiplexers, Registers, Shift Registers, Binary counter, Memory unit.
Data Representation: Data types, Complements, Fixed and Floating Point Representation, Other binary codes and error Detection codes

UNIT - II

Register Transfer and Micro operations: Register Transfer language, Register transfer, Bus and Memory Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operations and Arithmetic logic shift unit.
Basic Computer Organization and Design : Instruction codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycles, Memory Reference Instructions, Input-Output and Interrupts, Design of Accumulator logic.

UNIT - III

Programming the Basic Computer: Introduction, Machine Language, Assembly Language, The Assembler, Programming Arithmetic and Logic Operations, Subroutines and input output Programming.
Micro programmed Control: Control Memory, Address Sequencing, Micro program Example, Design of Control Unit.

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UNIT - IV

Central Processing Unit : Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program control, RISC.
Parallel Processing: Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline.
Computer Arithmetic: Addition and Subtraction, Multiplication algorithms, Division Algorithms, Floating point arithmetic operations, decimal arithmetic unit and decimal arithmetic operations.

UNIT - V

Input – Output organization : Peripheral Devices, I/O output interface, Asynchronous data transfer, Modes of transfer, Priority Interrupt, DMA, Input output Processor, Serial Communication.
Memory Organization: Memory Hierarchy, Main Memory, Auxiliary Memory, Associate Memory, Cache Memory, Virtual Memory.

LEARNING RESOURCES:

Text Books:

1. M.Morris Mano, "Computer System Architecture", Pearson Asia / Prentice Hall, Third edition, 1993.

Reference Books:

1. Miles Murdocca, Vincent Hecuring, "Computer Architecture and Organization" , John Wiley & Sons 2007.
2. Sivarama P Dandamudi "Fundamentals of Computer Organization and Design", Springer/Dreamtech Publishers, 2003.
3. William Stallings, "Computer Organization & Architecture", Pearson Education, Sixth Edition, 2003.
4. G.V. Anjaneyulu, " Computer Organization" , Himalya Publishing House.

Web Resources:

1. http://en.wikipedia.org/wiki/Computer_architecture
2. http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-823-computer-system-architecture-fall-2005/index.htm

HS 5311

English Language Training Lab – I

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 25
Practical	: 2 Hrs/Week	**Credits**	: 01

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Participate in group discussions keeping team dynamics in mind.
2. Agree and disagree politely using the polite functions of the English language.
3. Organize the structure of their speeches and presentations to make it more logical and understandable.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Use the functional aspects of the language to participate effectively in group discussions.
2. Make speeches for various occasions ranging from ceremonial introductions to informative and persuasive speeches.
3. Adapt their styles of presentations when making it as individuals and in teams.

COURSE CONTENTS:

Activities in IC Lab :

1. Group Discussion – Practice   (12 Sessions)

2. Public Speaking Skills Practice   (12 Sessions)

Prescribed Book:

Speak Well : Jayshree Mohanraj, Kandula Nirupa Rani and Indira Babbellapati – Orient BlackSwan

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Programming Lab - I
(C & C++ Lab)

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 9 Hrs/Week	**Credits**	: 03

COURSE OBJECTIVES

The course will enable the learners to:

1. Learn the fundamental programming concepts and methodologies which are essential to build C/C++ programs.
2. Strengthen their problem solving ability by applying the characteristics of structured and object-oriented approach.
3. Code, document, test, and implement a well-structured computer program using the C/C++ programming language.

COURSE OUTCOMES

At the end of the course the learners should be able to:

1. Use structured/object-oriented approach to develop solutions to given programming problems.
2. Apply programming principles to design and implement C/C++ programs.
3. Test, debug and document programs of C/C++.

COURSE CONTENTS:

Programs Using C:

1. Write a program to calculate simple formulae like area of Circle, Rectangle etc.
2. Write a program to accept a number from user and display all the prime numbers up to that number.
3. Write a program to find Sin(x) and Cos(x) using series expansion.
4. Write a program to find maximum, minimum and sum of given set of numbers.
5. Write a program to demonstrate call-by-value and call-by-reference parameter passing mechanism.
6. Write a program to implement Linear and Binary Search.
7. Write a program to implement Selection and Bubble sort.
8. Write a program to implement Matrix Multiplication using pointers.
9. Write a program to implement Recursion: Factorial, Fibonacci, GCD and Tower Hanoi.
10. Write a program to find the number of letters, words and sentences in a given string.
11. Write a program to do string manipulation without using in-built library functions.
12. Write a program to generate address labels using structures.
13. Write a program to demonstrate Sequential File Access.
14. Write a program to demonstrate Random File Access.

15

Programs Using C++:

15. Classes for Bank Account, Student Information, Library Catalogue
16. Design and Implement Class 'String' with a default, parameterized and copy Constructors. Provide member functions to accept and display string and friend function to concatenate and compare two strings without using operator overloading.
17. Creation of complex class with operator overloading.
18. Creation of Inheritance Hierarchy (Bank Account, Person).
19. Programs demonstrating virtual, pure virtual functions using abstract base class "shape".
20. Template functions for Min() and Max() for finding minimum and maximum in a list.
21. Program on class Templates.
22. Write a Program to implement exception handling.
23. Program demonstrating Stream and File I/O using employee class.

LEARNING RESOURCES:

Text Books:

1. Behrouz A. Forouzan, Richard F Gilberg, "Computer Science − A Structured Approach Using C", 3rd Edition, Cengage Learning 2007. (For Units I, II, III)
2. Walter Savitch, "Problem Solving with C++", 7th edition, Pearson Education Publishing, 2013. (For Units IV, V)

Reference Books:

1. Harry.H. Cheng, "C / C++ for Engineers and Scientist – An Interpretive Approach", TMH, 2010.
2. Ds. Malik, "C++ Programming Language", Cengage Learning, 2009.
3. Kernighan BW and Ritchie DM, "the C Programming Language", 2nd Edition, PHI, 2006.
4. Bjarne Stroustrup, "The C++ Programming Language", 3rd Edition, Pearson Education, 2000.
5. J.R. Hanly and E.B Koffman, "Problem Solving and Program Design in C", Pearson Education, 2007.

Web Resources:

1.http://nptel.ac.in

CA - 5331

Programming Lab – II
(Elements of Information Technology Lab)

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 3 Hrs/Week	**Credits**	: 02

COURSE OBJECTIVES:

The Course will enable the learners to:

(This is an introductory laboratory in Information Technology)

1. To ensure that students have basic computer operating knowledge.
2. To provide fundamental knowledge on computer hardware.
3. To provide knowledge on operating systems installations, and System troubleshooting.
4. To provide fundamental knowledge on office automation tools.

COURSE OUTCOMES:

After completion of this course, the learners would be able to:

1. Identify and describe the relationships and role of the components of the "logical" diagram of the computer. (e.g. processor, RAM, ROM, BIOS, input, output, storage.)
2. Relate the "logical" diagram of a computer system to the "physical" system by identifying physical components of a computer.
3. Installation of Operating System with partitions for Windows and Linux, configure for network connection
4. Troubleshoot his/her PC from time to time
5. Identify and distinguish between various types of application software.
6. Hands on experience in Office automation tools like MS-Office, basic HTML, and Linux commands.

Lab work/Programs:

1. Identify and describe the relationships and role of the components of the "logical" diagram of the computer. (e.g. processor, RAM, ROM, BIOS, input, output, storage).

2. Relate the "logical" diagram of a computer system to the "physical" system by identifying physical components of a computer and describing their purpose.(e.g. the processor, memory chips, mother board, disk drives and controller cards such s AGP board, network cards, sound card, as well as parallel and serial ports etc).

3. Assemble the computer which they will use and load the OS with partitions for Windows and Linux, configure for network connection.

4. Troubleshoot his/her PC from time to time.

5. Install/Uninstall SW/HW on his/her PC from time to time.

6. Identify and distinguish between various types of application software by describing and using them (e.g. word processor, spreadsheet, database, browser, mailers etc.).

7. **MS Word:** Create documents with standard formatting commands, single/multi column, insert pictures/objects, drawings, hyperlinks, header/footer, tables, No macros.

8. **MS Power Point:** Create presentations with preset animations, using different layouts, backgrounds, slide master, insert pictures/objects, drawings, hyperlinks, header/footer, tables.

9. **MS Excel :** Creating worksheets with various kinds of data, making charts, conditional formatting, awareness of the various functions-statistical, date/time, math/trig etc. ability to explore (help) and use these functions if need be, demonstration through some common functions like sum, average, standard deviation, logical and information.

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10. **HTML:** Should be able to create their web-page(title, text, frames, hyperlinks to some sites, pictures, lists, tables, fonts and colors) without using any web authoring tools.

11. Distinguish between various commercially available systems by relating the cost to features available on each system.

12. Be able to use the following list of commands in Linux:

alias	cp	ftp	man	talk	cmp
banner	date	gv	mkdir	telnet	gzip
bc	diff	gunzip	more	unzip	is
bg	dir	head	mv	vi	tar
cal	display	history	passwd	vim	ands
cat	df	id	pine	vimtutor	mail
cc	du	indent	ps	wall	chown
cd	echo	kill	pwd	wait	find
chgrp	exit	last	reboot	whereis	logout
chmod	fg	login	rm	who	tail
clear	file	logname	rmdir	whoami	zip
chfn	finger	in	shutdown	write	

13. **MS-Access:** Create database for student information, library information and inventory. Generation of queries, reports and transaction processing.

LEARNING RESOURCES:

Text Books:

1. Williams B.K. Sawyer et.al., "Using Information Technology", Sixth Edition, Tata McGraw-Hill, 2006.

Reference Books:

1. Aksoy & DeNardis "Introduction to Information Technology", Cengage Learning, 2006.
2. Dennis P. Curtin, Kim Folley et.al., "Information Technology, The breaking wave", McGraw Hill, 1998.
3. ITL Edn Solutions Ltd. "Introduction to Information Technology", Pearson Education, 2005.

Web Resources:

1. http://office.microsoft.com/en-us/training/
2. http:// www.s3.amazonaws.com/szmanuals
3. http://www.baycongroup.com/wlesson0.htm
4. http://portal.aauj.edu/portal_resources/downloads/hardware/acomplete_illustrated_Guide_tothe _pc_hardware.pdf
5. http://faculty.ivytech.edu/~smilline/downloads/hardware.pdf

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD-31
DEPARTMENT OF COMPUTER APPLICATIONS
SCHEME OF INSTRUCTION & EXAMINATION
MCA I YEAR II-Semester

Sl. No.	Syllabus Ref. No.	SUBJECT	Periods per week			End Sem Exam hrs	Maximum Marks		Credits
			L	T	P		End Sem Exam	Sessi-onals	
I YEAR II SEMESTER									
1	HS 5510	Communicative English – II	2	-	-	2	35	15	2
2	CA 5520	Probability and Statistics	4	1	-	3	70	30	3
3	CA 5530	Object Oriented Programming using JAVA	4	1	-	3	70	30	3
4	CA 5540	Data Structures	4	1	-	3	70	30	3
5	CA 5550	Software Engineering	4	1	-	3	70	30	3
6	CA 5560	Computer Networks	4	1	-	3	70	30	3
Practicals									
7	HS 5811	English Language Training Lab – II	-	-	2	2	25	25	1
8	CA 5821	Programming Lab-III OOP (JAVA) Lab	-	-	6	3	50	25	3
9	CA 5831	Programming Lab-IV (DS Lab)	-	-	6	3	50	25	3
		TOTAL	22	05	14	25	510	240	24

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HS 5510

COMMUNICATIVE ENGLISH - II

Lecture	: 2 Hrs/Week	**Internal Assessment**	: 15
Tutorial	: -	**End Sem Exam**	: 35
Practical	: -	**Credits**	: 02

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Define communication and list the various styles and channels of communication.
2. Participate in group discussions keeping group dynamics and team spirit in mind.
3. Use the various techniques and styles involved in giving speeches.
4. Make purposeful oral and written presentations.
5. Implement the rules of writing reports and letters.
6. Grasp the forms and meaning of words in isolation as well as in contexts and use them to enhance their communication.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Use the English language as an tool for effective communication in various contexts.
2. Make informed judgments and articulate their views on various topics ranging from political issues to social ones.
3. Plan, prepare and execute speeches on various occasions.
4. Write reports and letters on various issues.
5. Use words, phrases and sentences clearly and accurately in the spoken and written forms of communication.
6. Adjust to their superiors, peers and subordinates at their workplace.

COURSE CONTENTS:

UNIT – 1 : Channels of communication- styles of communication-interpersonal communication-Johari window- Assertiveness – Presentation Skills – Practice Sessions on Presentations

UNIT – 2 : Group Discussion Skills – Group Behaviour – Group Dynamics – Group Spirit –Agreements & Disagreements – Adaptability - Consensus – Conclusion.

UNIT – 3 : Public Speaking Skills : Types of Speeches –Business Presentations- types of presentations- types of delivery-process and preparing and delivering presentations–Q & A interactive sessions.

UNIT – 4 : Report writing- types of reports-structure of formal reports. letter writing and resume- Writing.
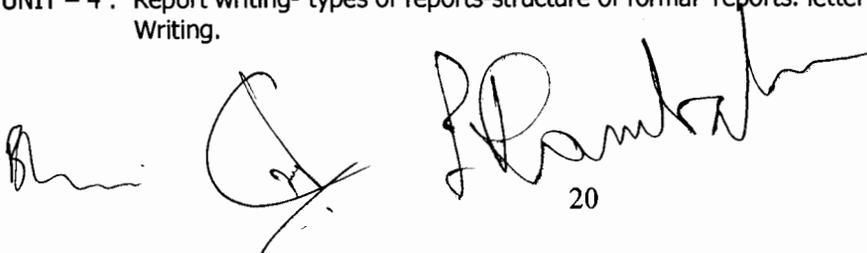
20

UNIT – 5 : Advanced grammar and vocabulary- clauses modals and common errors. Synonyms antonyms, homonyms, idioms, phrasal verbs - technical and business vocabulary. Interview Skills

LEARNING RESOURCES:

Prescribed textbook :

Technical communication – Principles and Practice (2nd Edition 2014) – Meeenakshi Raman and Sangeeta Sharma – Oxford University Press

Reference Books:

1. Teaching reading as a foreign language, Christine Nuttal, Macmillan
2. Business vocabulary in use, Bill Mascal, CUP
3. Decision maker, David Evans, CUP
4. Oxford practice grammar(with CD-Rom George Yule (Advanced), OUP

CA 5520

PROBABILITY AND STATISTICS

|			
Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Distinguish between quantitative and categorical data and know which graphical and tabular techniques to apply to each.

2. Produce and interpret graphical displays for simple data sets.

3. Identify when correlation and regression analyses are appropriate.

4. Discuss issues associated with collecting and interpreting data from sample surveys and polls.

5. Identify the role of randomization in sample surveys.

6. Calculate probabilities using Venn diagrams, tree diagrams, and the Addition and Multiplication rules.

7. Describe the concepts of mutually exclusive events, conditional probability, dependent and independent events.

8. Discuss the concept of a sampling distribution.

9. Formulate null and alternative hypotheses.

10. Conduct hypothesis tests for population proportions and means.

11. Explain the meaning of P-values in hypothesis testing.

12. Identify when and how to use the t-distribution.

13. Determine appropriate sample sizes for estimating an unknown population proportion or mean.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Collection of data by the primary and secondary methods and also represent the collected data in tabular form and diagrams also Collection of data by sampling

2. Simple real world applications of Bayes rule.

3. Simple industrial applications of discrete distributions (Binomial and Poisson) and continuous distributions (Uniform, Normal, Gamma and Beta).

4. Understand how to calculate probability density function cumulative distribution function, mathematical expectation of discrete and continuous random variables.

5. Know how to work with bivariate distributions and how to calculate covariance, correlation and coefficient of correlation.

6. Testing of hypothesis by using t-test, F-test and chi-square test.
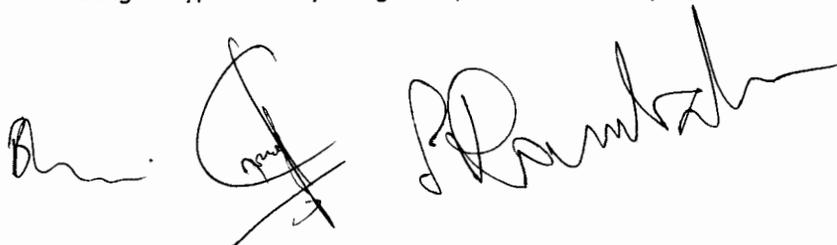
COURSE CONTENTS:

UNIT - I

Data Validation and Information Abstraction: Methods of collecting data efficiently (Primary data, Secondary Data – Limitations). Gathering information from data charting (Data Charting, Bar Diagram, graphs examples).

UNIT - II

Probability: Laws of Probability, Probability distributions, Discrete, Equiprobable, binomial, Poisson.

UNIT - III

Continuous Distributions: Rectangular, normal, gamma and beta.

UNIT - IV

Statistical Methods: Frequency distributions, Mathematical Expectations, Moments, Skewness and Kurtosis.

UNIT - V

Correlation and Regression, Introduction to tests of Significance, χ^2, t, F - tests.

LEARNING RESOURCES:

Text Books:

1. S.C Gupta and V.K Kapoor, "Fundamentals of Mathematical Statistics", 1989.

Reference Books:

1. William Mendenhall, Robert J. Beaver, Barbara M.. Beaver, "*Introduction to Probability and Statistics*" Thomson Brooks/Cole, Eleventh Edition, 2003.

2. Richard A.Johnson, "Probability and Statistics for Engineers", Prentice Hall of India, Seventh Edition, 2005.

3. Miller & Freund, Probability and Statistics for Engineers", 5th Edition, PHI Publications.

4. Peyton Z. Peebles, Jr., "Probability, Random Variables And Random Signal Principles", 4th Edition, Tata McGraw-Hill.

Web Resources:

1. QEEE- recorded lectures – www.vcenet

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CA - 5530
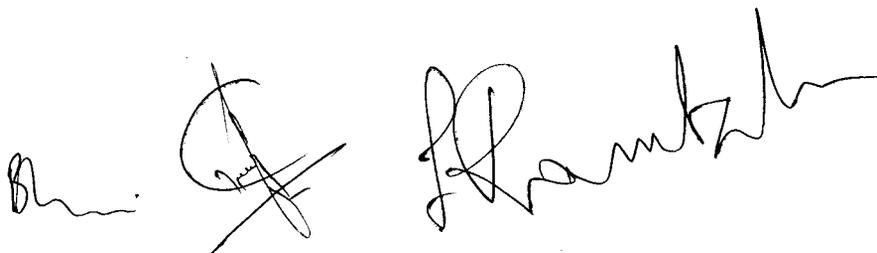
OBJECT ORIENTED PROGRAMMING USING JAVA

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hr/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Describe the Object Oriented paradigm and its features in the Java programming language.

2. Describe Exception Handling and Collections Framework.

3. Perform Read and Write using the various stream classes in java.io package

4. Develop a GUI application that can take input, using AWT (Abstract Window Toolkit)

5. Describe the basics of multithreading and develop multithreaded applications.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

5. Create Java technology applications that leverage the Object Oriented features of the Java language.

6. Implement error-handling techniques using exception handling and create simple multithreaded applications

7. Identify the uses of Collections framework and create simple Java applications using it.

8. Implement Input/Output functionality through reading from and writing to data and text files.

9. Create an event-driven GUI by using Java GUI components

COURSE CONTENTS:

UNIT - I

Object Oriented System Development: Understanding Object Oriented Development, Understanding Object Oriented Concepts, Benefits of Object Oriented Development.

Java Programming fundamentals : Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control Statements, Classes, Methods, Inheritance, Packages and Interfaces.

UNIT -II

Exceptional Handling, Multithreaded Programming, I/O basics, Reading console input and output, Reading and Writing Files, Print Writer Class, **String Handling**.

UNIT - III

Exploring java.lang, **Collections** - Overview, Collections Interfaces, Collection Classes, Iterators, RandomAccess Interface, **Maps**, Comparators, Arrays, Legacy classes and Interfaces, **String Tokenizer**, BitSet, Date, Calendar, Observable, Timer.

UNIT - IV

Java I/O classes and Interfaces, Files, Stream and Byte Classes, Character Streams, Serialization

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Networking: Networking Basics, Internet address, URL, TCP/IP and Datagrams.

UNIT - V

GUI and Event Driven Programming: Applet Class, Event Handling, Delegation Event Model, Event Classes, Event Listener Interfaces, Customising Frame Windows, GUI Programming Basics, Text related GUI Components, Layout Managers, Effective use of nested panels, other GUI components, Menus and menu handling events.

LEARNING RESOURCES:

Text Books:

1. Herbert Schildt "JAVA 2: The Complete Reference" V edition 45th reprint 2009, Tata McGraw Hill.

Reference Books:

1. James M. Slack "Programming and Problem solving with Java" Thomson Learning, 2000.
2. C Thomas Wu "An Introduction to object oriented programming with Java" Tata McGraw Hill, 2005.
3. "Object Oriented programming using Java" Raj Kumar Buyya and Thamarai Selvi.

Web Resources:

1. http://www.oracle.com/us/technologies/java/standard-edition/overview/index.html
2. http://docs.oracle.com/javase/tutorial/
3. www.buyya.com

CA 5540

DATA STRUCTURES

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

Course Objectives

The course will enable the learners to:

1. Describe the various mechanisms of data organization in the real world.
2. Do Design, analysis and implementation of basic data structures and algorithms.
3. Choose the appropriate data structure for a specified problem.
4. Assess how the choice of data structures impacts the performance of programs.

Course Outcomes

At the end of the course the learners should be able to:

1. Implement the various operations like searching, insertion, deletion and traversing mechanism on linear lists, linked lists and their applications.
2. Design stacks, queues using arrays or linked lists and can explain their applications.
3. Discuss the computational efficiency of the principal algorithms for sorting, searching and hashing.
4. Implement different methods of tree traversals and advanced tree structures.
5. Apply graph structures to solve such as shortest path, minimal spanning tree.

COURSE CONTENTS:

UNIT-I

Algorithm Specification, Performance Analysis and Measurement. Abstract Data Types and the C++ Class.

Arrays: Array as an Abstract Data Type, Sparse Matrices, Representation of Arrays.

Linked Lists: Singly Linked Lists and Chains, Representing Chains in C++, Template Class Chain, Circular Lists, Available Space Lists, Polynomials, Doubly Linked Lists.
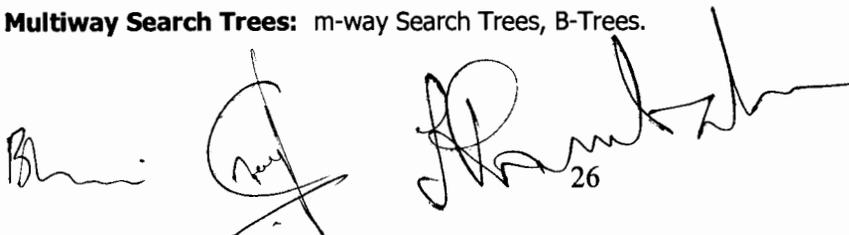
UNIT-II

Stacks and Queues: The Stack Abstract Data Type and Linked Stacks, Evaluation of Expressions. The Queue Abstract Data type and Linked Queues, A Mazing Problem.

UNIT-III

Trees: Introduction, Binary Trees, Binary Tree Traversal and Tree Iterators, Copying Binary Trees, Threaded Binary Trees, Heaps, Binary Search Trees.

Efficient Binary Search Trees: AVL Trees, Red-Black Trees.

Multiway Search Trees: m-way Search Trees, B-Trees.

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UNIT-IV

Sorting: Insertion sort, Quick sort, Merge sort, Heap sort, Sorting on Several Keys, List and Table Sorts, Summary of Internal Sorting.

Hashing: Static Hashing, Hash Tables, Hash Functions, Secure Hash Functions, Overflow Handling, Theoretical Evaluation of Overflow Techniques

UNIT-V

Graphs: Graph Abstract Data Type, Elementary Graph Operations, Minimum Cost Spanning Trees, Shortest Paths.
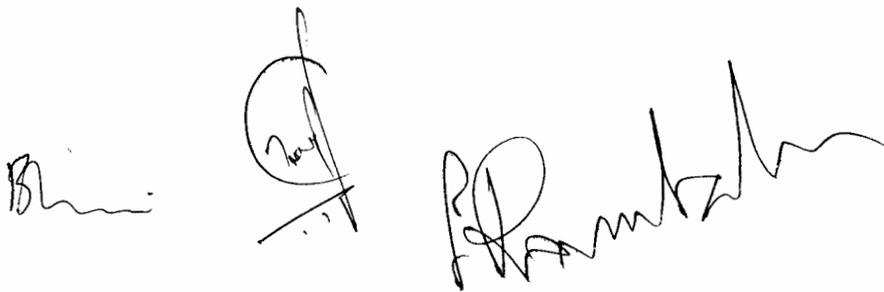
LEARNING RESOURCES:

Text Books:

1. Ellis Horowitz, Dinesh Mehta, S. Sahani. Fundamentals of Data Structures in C++, Universities Press. 2007.

Reference Books:

1. Mark Allen Weiss, Data Structures and Algorithm Analysis in C++, Third Edition, Pearson Education 2007.
2. Michael T. Goodrich, Roberto Tamassia, David Mount, "Data structures and Algorithms in C++", Second Edition, John Wiley & Sons, Inc., 2011
3. D S Malik, "Data Structures Using C++", Second Edition, Cengage Learning, 2009
4. Cormen Leiserson & Rivest, "Introduction to Algorithms", Third Edition, Prentice Hall India, 2009.

Web Resources:

1. http://nptel.ac.in

CA 5550

SOFTWARE ENGINEERING

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. To know about various process models.
2. To know the importance of SRS.
3. To know about function oriented design and object oriented design.
4. To know the criteria for designing test cases and various approaches of testing and the product metrics.
5. To know the concepts of re-engineering, maturity models and the significance of process .

COURSE OUTCOMES:

At the end of the course, the learners would be able to:

1. Have knowledge on various Process models such as water fall model, prototype model, Iterative model, spiral model, Time boxing model and etc.
2. Analyze the requirements and create an SRS document for the given project.
3. Convert an SRS document into design using function oriented or object oriented design.
4. Design test cases for testing using either black box or white box approaches and will have good understanding on product metrics.
5. Have knowledge on business processes, software reengineering, reverse engineering, restructuring and forward engineering and maturity models.

COURSE CONTENTS:

UNIT - I

The software Problem: Cost, Schedule and Quality, Scale and Change

Software Processes: Process and project, Component Software Processes, Software Development process Models, Project management Process

UNIT -II
Software Requirement Analysis and Specification: Value of a good SRS, Requirements process , Requirements specification, Functional Specification with Use Cases, Other approaches for analysis.
Software Architecture: Role of Software Architecture, Architecture Views, Component and Connector view, Architecture Styles for C and C View, Documenting Architecture Design, evaluating Architectures.

UNIT - III
Planning a Software Project: Effort Estimation, Project Schedule and staffing, Quality Planning, Risk Management Planning, Project Monitoring Plan, Detailed scheduling,
Design: Design concepts, Function oriented Design, Object Oriented Design, Detailed Design

UNIT - IV
Coding and Unit Testing: Programming Principles and Guidelines, Incrementally developing code, managing evolving code, unit testing, code inspection

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Testing: Testing Concepts, Testing Process, Black Box testing, White box testing
Product Metrics: Metrics for Analysis model, Metrics for Design Model

UNIT - V
Reengineering: Business process Reengineering, Software reengineering, Reverse engineering, Restructuring, Forward engineering, Economics of Reengineering
A Generic view of process: Software Engineering – A layered technology, A Process Framework, The Capability Maturity model Integration (CMMI), Process patterns, Process assessment, personal and Team process models, Process technology, product and process.

LEARNING RESOURCES:

Text Books:

1. Pankaj Jalote, "An Integrated Approach to Software Engineering", 3rd edition, Narosa Publishing House.

2. Roger S, Pressman, Software E ngineering: A Practitioner's Approach, 7th Edition, Tata Mc GrawHill.

Reference Books:

1. James F. Peters, Witold Pedrycz, Software Engineering- An Engineering Approach, John WUey Inc., 2000.

Web Resources:

1. www.mhhe.com/pressman
2. http://nptel.iitm.ac.in

CA 5560

COMPUTER NETWORKS

Lecture	: 4 Hrs/Week	**Internal Assessment**	: 30
Tutorial	: 1 Hrs/Week	**End Sem Exam**	: 70
Practical	: -	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. To be able to know the reference models.
2. To able to know about the physical layer.
3. To be able know the access mechanisms.
4. To be able to know about the routing protocols and routing concepts.
5. To be able to know the transport layer services.
6. To be able to know the application layer protocols.

COURSE OUTCOMES:

At the end of the course, the learners would be able to:

1. Have a comprehensive knowledge on OSI model and TCP/IP model.
2. Have knowledge on different physical media, encoding mechanisms and modems.
3. Have knowledge on data link layers functions such as framing, access control protocols and error control mechanisms.
4. Have good understanding on routed protocols such as IPv4, IPv6 and routing protocols RIP, OSPF and BGP of network layer.
5. Identify the services of connection oriented and connectionless of transport layer and will have an understanding on fragmentation and reassembly and port addresses.
6. Have knowledge on application layer services such as DNS, FTP, SMTP, HTTP, and WWW.

COURSE CONTENTS:

UNIT - I

Data Communications: Components – Direction of Data Flow – Networks – Components and Categories – Topologies – Protocols and Standards – ISO/OSI model , TCP/IP.

Transmission Media: Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing.

UNIT -II

Datalink Layer: Error Detection and Correction, CRC, Hamming Code, Flow Control and Error Control – Stop and Wait – go back N ARQ – Selective Repeat ARQ – Sliding window – HDLC.

MAC Layer: Multiple Access: Random Access, Controlled Access, Channelization

Wired LANs: Ethernet

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UNIT - III

Network Layer: Logical Addressing: IPv4 Addresses, IPv6 addresses, Internetworking, IPv4:Datagram, fragmentation, checksum, options **IPV6**: Advantages, Packet format, Extension headers

Routing – Distance Vector Routing, Link State Routing, OSPF and BGP.

UNIT - IV

Transport Layer: Services of Transport Layer, Multiplexing.

Transmission Control(TCP) – Congestion Control , Timer Management, Quality of Services(QOS) and User Datagram Protocol(UDP)

UNIT - V

Application Layer: Domain Name Space(DNS) – SMTP – FTP – HTTP – WWW.

LEARNING RESOURCES:

Text Books:

1. Andrew S. Tanenbaum, Computer Networks, 4th Edition, Pearson Education, 2003.
2. Data Communications and Networking, Fourth Edition, Behrouz A. Forouzan.
3. Computer Networking – A Top Down Approach, Kurose & Ross, 3rd Ed. Pearson.

Reference Books:

1. W. Richared Stevens, Stephen A R-ago, Advanced Programming in the Unix Environment, 2nd Edition, Pearson Education,2005.

Web Resources:

1. http://nptel.iitm.ac.in
2. http://www.prenhall.com/tanenbaum

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HS 5811

ENGLISH LANGUAGE TRAINING LAB – II

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 25
Practical	: 2 Hrs/Week	**Credits**	: 01

COURSE OBJECTIVES:

The Course will enable the learners to:

1. Identify the different sounds of the English language
2. Improve their pronunciation by learning stress, rhythm and intonation.
3. Reduce mother tongue influence when speaking English.
4. Use language effectively in debates, interviews, group discussions and meetings.

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Speak fluently without too much mother-tongue interference.
2. Discuss topics using discourse makers and linkers appropriately while debating.
3. Make smooth transitions using appropriate words and sentences when making presentations.
4. Prepare power-point slides and effectively present them.

COURSE CONTENTS:

Activities in Phonetics Lab:

1. Identification of Consonant Sounds & Vowel Sounds   (6 Sessions)

2. Pronunciation of Words and Sentences - towards neutralization of accent.   (6 Sessions)

Activities in IC Lab:

1. Debate – Practice Sessions   (6 Sessions)

2. Power Point Presentations   (6 Sessions)

LEARNING RESOURCES:

Prescribed book:

Speak Well : Jayshree Mohanraj, Kandula Nirupa Rani and Indira Babbellapati - Orient BlackSwan

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CA - 5821

PROGRAMMING LAB – III
OOP (JAVA) LAB

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 6 Hrs/Week	**Credits**	: 03

COURSE OBJECTIVES:

The Course will enable the learners to:

1. List the Object-Oriented Programming language concepts, particularly Java.

2. Describe Exception Handling and Multithreading

3. Read and write files using java.io package

4. Develop a GUI application.

5. Describe the Java technology Abstract Window Toolkit (AWT).

COURSE OUTCOMES:

At the end of the course the learners should be able to:

1. Describe the behaviour of primitive data types, object references, and arrays

2. Implement the concepts of classes, interfaces and packages in Java.

3. Write, debug, and document well-structured and simple Java applications

4. Implement a multithreaded application that can also handle exceptions.

5. Implement the Collection and Map concepts in Java.

COURSE CONTENTS:

1. A program to illustrate the concept of class with constructors, methods and overloading.

2. A program to illustrate the concept of inheritance and dynamic polymorphism.

3. A program to illustrate the usage of abstract class.

4. A program to illustrate multithreading.

5. A program to illustrate thread synchronization.

6. A program using String Tokenizer

7. A program using Linked list class.

8. A program using TreeSet class.

9. A program using HashSet and Iterator classes.

10. A program using Map classes.

11. A program using Enumeration and Comparator interfaces.

12. A program to illustrate usage of filter and Buffered I/o streams.

13. A program to illustrate the usage of Serialization.

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14. An application involving GUI with different controls, menus and event handling.

15. A Program to implement and applet.

16. A Program to implement TCP/IP client server program.

17. A program to implement UDP client server program.

LEARNING RESOURCES:
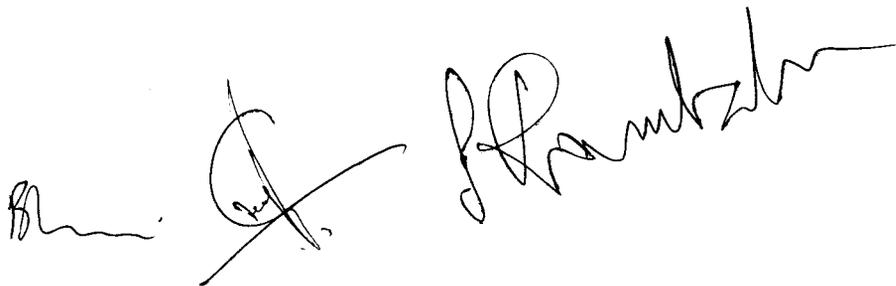
Text Books:

1. Herbert Schildt "JAVA 2: The Complete Reference" V edition 45th reprint 2009, Tata McGraw Hill.

Reference Books:

1. James M. Slack "Programming and Problem solving with Java" Thomson Learning, 2000.

Web Resources:

1. http://www.oracle.com/us/technologies/java/standard-edition/overview/index.html
2. http://docs.oracle.com/javase/tutorial/

CA 5831

PROGRAMMING LAB - IV
(DS LAB)

Lecture	: -	**Internal Assessment**	: 25
Tutorial	: -	**End Sem Exam**	: 50
Practical	: 6 Hrs/Week	**Credits**	: 03

COURSE OBJECTIVES

The course will enable the learners to:

1. Design various linear and non linear data structures.
2. Identify and apply the suitable data structure for the given real world problem.
3. Gain knowledge in practical applications of data structures.

COURSE OUTCOMES

At the end of the course the learners should be able to:

1. Write programs that use data structures such as: arrays, linked lists, stacks, queues, trees, hash tables, and graphs.
2. Choose the appropriate data structure for modeling a given problem.
3. Implements common searching, sorting algorithms and various applications of data structures.

COURSE CONTENTS:

1. Implementation of array ADT.
2. Implementation of Linked List ADT (single, double and circular).
3. Polynomial arithmetic using linked list.
4. Implementation of Stacks (Arrays and Linked Representation).
5. Infix to Postfix Conversion, evaluation of postfix expression.
6. Implementation of Queues (Linear, Circular and DeQueue).
7. Application of Queues (Ticket reservation, Super Market).
8. Implementation of Linear and Binary Search.
9. Implementation of Hashing.
10. Implementation of Collision Resolution Techniques.
11. Implementation of Selection Sort.
12. Implementation of Insertion Sort.
13. Implementation of Shell Sort.
14. Implementation of Quick sort.
15. Implementation of Merge Sort.
16. Implementation of basic operations and traversals on Binary trees.
17. Implementation of Binary Search Trees.
18. Implementation of Heap Sort.
19. Implementation of operations on AVL Trees.
20. Implementation of Red-Black Trees.

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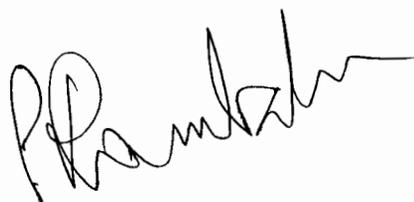
21. Implementation of Graph Traversal Methods.
22. Implementation of Minimal Spanning Tree.

LEARNING RESOURCES:

Text Books:

1. Ellis Horowitz, Dinesh Mehta, S. Sahani. Fundamentals of Data Structures in C++, Universities Press. 2007.

Reference Books:

1. Mark Allen Weiss, Data Structures and Algorithm Analysis in C++, Third Edition, Pearson Education 2007.
2. Michael T. Goodrich, Roberto Tamassia, David Mount, "Data structures and Algorithms in C++", Second Edition, John Wiley & Sons, Inc., 2011
3. D S Malik, "Data Structures Using C++", Second Edition, Cengage Learning, 2009
4. Cormen Leiserson & Rivest, "Introduction to Algorithms", Third Edition, Prentice Hall India, 2009.

Web Resources:

1. http://nptel.ac.in