BACHELOR OF COMPUTER APPLICATIONS

REGULATIONS, CURRICULUM & SYLLABI

(Effect from the Academic Year 2009-10)

PONDICHERRY UNIVERSITY
KALAPET
PONDICHERRY – 605 014.
PONDICHERRY UNIVERSITY
PONDICHERRY UNIVERSITY
Bachelor of Computer Applications (BCA)
REGULATIONS
(Effective from the academic year 2009 – 2010)

Aim of the Course
The Degree of Bachelor of Computer Applications aims to introduce the students to the computer and its applications. At the end of the course, the students are expected to have good working knowledge in database and Internet applications.

Eligibility for Admission
Candidates for admission to B.C.A. shall be required to have passed Higher Secondary Examination conducted by the Government of Tamil Nadu with Mathematics / Business Mathematics / Computer Science as one of the subjects of study or an examination accepted as equivalent thereto, subject to such conditions as may be prescribed therefore.

Lateral Entry
Candidates who have passed Diploma in Computer Science / Information Technology/ Computer Technology / Computer Application in I Class (10+3 years of study) are eligible to apply for the lateral entry to the 2nd year of the course subject to availability of seats, but limited to 10% of the sanctioned intake.

Duration of the Course
The course shall be of three years duration spread over six semesters. The Maximum duration to complete the course shall be 5 years.

Medium
The medium of instruction shall be English.

Passing Minimum
Passing Eligibility & Classification for the award of the Degree as existing for the other B.Sc. Degree Courses.
# PONDICHERRY UNIVERSITY
## Bachelor of Computer Applications (BCA)
### STRUCTURE OF THE COURSE 2009-2010

## First Semester

<table>
<thead>
<tr>
<th>Paper</th>
<th>Lecture hours/week</th>
<th>Practical hours/week</th>
<th>Duration of Exam (Hrs)</th>
<th>Max Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. English – I</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>2. Major Paper I – Fundamentals of Computer Science</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>3. Major Paper II- Information Technology</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4. Major Paper III- Programming Concepts and C</td>
<td>4</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>5. Allied Paper I-Mathematics for Computer Science</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical I – Office Automation Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical II – C Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
</tbody>
</table>

## Second Semester

<table>
<thead>
<tr>
<th>Paper</th>
<th>Lecture hours/week</th>
<th>Practical hours/week</th>
<th>Duration of Exam (Hrs)</th>
<th>Max Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. English – II</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>2. Major Paper IV- Object Oriented Programming</td>
<td>4</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>3. Major Paper V-Fundamentals of Data Structures</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4. Allied Paper II-Probability and Statistics</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>5. Allied Paper III-Fundamentals of Accountancy</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical III – OOP (C++) Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical IV – Data Structures Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
</tbody>
</table>

## Third Semester

<table>
<thead>
<tr>
<th>Paper</th>
<th>Lecture hours/week</th>
<th>Practical hours/week</th>
<th>Duration of Exam (Hrs)</th>
<th>Max Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major Paper VI- Computer Organisation</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>2. Major Paper VII- Java Programming</td>
<td>4</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>3. Major Paper VIII- Fundamentals of Algorithms</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4. Allied Paper IV-Financial Management</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>5. Allied Paper V-Operation Research</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical V – Java programming Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical VI – Financial &amp; Statistical packages Lab</td>
<td>3</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
</tbody>
</table>
Fourth Semester

<table>
<thead>
<tr>
<th>Paper</th>
<th>Lecture hours/week</th>
<th>Practical hours/week</th>
<th>Duration of Exam(Hrs)</th>
<th>Max Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major Paper IX- Operating Systems</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>2. Major Paper X- Data Communication and Networks</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>3. Major Paper XI- Visual Programming</td>
<td>4</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4. Major Paper XII- Database Management Systems</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>5. Allied Paper VI- Principles of Management</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical VII – Visual Programming and RDBMS Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical VIII – Networks Lab</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fifth Semester

<table>
<thead>
<tr>
<th>Paper</th>
<th>Lecture hours/week</th>
<th>Practical hours/week</th>
<th>Duration of Exam(Hrs)</th>
<th>Max Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major Paper XIII- Software Engineering</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>3. Major Paper XV- E-Commerce</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4. Major Paper XVI- Web Technology</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>5. Elective I</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical IX – .Net Framework Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Practical X – Web Technology Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
</tbody>
</table>

Sixth Semester

<table>
<thead>
<tr>
<th>Paper</th>
<th>Lecture hours/week</th>
<th>Practical hours/week</th>
<th>Duration of Exam(Hrs)</th>
<th>Max Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Major Paper XVII- Multimedia Applications</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>2. Elective II</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>3. Elective III</td>
<td>5</td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>4. Practical XI – Multimedia Applications Lab</td>
<td></td>
<td></td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>5. Project Work</td>
<td>12</td>
<td></td>
<td>Viva-Voce</td>
<td>100*</td>
</tr>
</tbody>
</table>

* Internal Assessment : 50 marks & Project Report and Viva-Voce: 50 marks

List of Electives

1. Introduction to Web User Interface Design
2. IT Project Management
3. Communication Skills
4. Client-Server Technology
5. Web Services
6. Bio Informatics
7. Mobile Communication
8. Network Security
9. Data Warehousing and Mining
10. Software Testing
11. Introduction to Intelligent systems
12. Distributed Database Management system
PONDICHERRY UNIVERSITY  
BACHELOR OF COMPUTER APPLICATIONS (BCA)  
FIRST SEMESTER  

ENGLISH I  
A. The Basic -Applied Grammar and Usage  

Unit I  
Rules of the Language:  
Parts of Speech: Nouns and Pronouns -Correct usage; Adjectives and Degrees of Comparison; Verbs -kinds; Tenses; Tense forms; Adverbs; Agreement of the subject with the verb; Phrasal verbs, voice change; Auxiliaries; prepositions -common errors; conjunctions - their correct uses, Clauses -kinds -usage; Articles -determiners, question, tags; Direct and Indirect speech, correction of sentence; Punctuation.  

Unit II  
Vocabulary Building:  
Idioms -different kinds. Phrases, Fixed Expressions, common foreign words and expressions (e.g. adhoc) -Word for formation - different processes; spelling; one-word substitutes; word often confused and misused.  

Unit III  
Pronunciation Drills (Identifying problem areas), vowels consonants, IPA, Phonetic Notations -how to look up a word Dictionary for correct pronunciation.  

Unit IV  
Conversational English (both theory and practical) stress, Tonal Variations, their importance; what is an interview? How to face an interview?; How to participate in a debate?; What is a Meeting? - Procedures -How to convene?; Discussion -How to participate.  

C. Process of writing  

Unit V  
Sentence Patterns and Paragraph writing. Logical writing - topical sentences - arrangement of facts -supporting materials.  

Text Books  
1. Tickoo and Subramanian, “Functional Grammar”  
2. Pink and Thomas, ” English Grammar. Composition and Commercial Correspondence”  
4. Dr. V. Ayothi and Dr. R. Vedavali ,” English for competitive examination”, New century book house, 2002
FIRST SEMESTER
MAJOR PAPER – I
FUNDAMENTALS OF COMPUTER SCIENCE

Unit I

Unit II
Boolean Algebra and Logic Circuits
Input Devices: Keyboard, Mouse, Track ball, Joystick, Scanner, Digital Camera, MICR, OCR, Barcode Reader, Touch Screen, Light Pen.
Output Devices: Monitor, Printer, Plotter, Sound Card and Speaker.

Unit III
Memory Units: RAM, ROM, PROM, EPROM, and EEPROM

Unit IV
Programming Languages; Machine Language, Assembly Language, High Level Language, Types of High Level Language, Compiler and Interpreters

Unit V
Introduction to Software Development: Defining the Problem, Program Design, Coding, Testing, Documenting, and maintaining the program.

Text Book

Reference
FIRST SEMESTER
MAJOR PAPER – II
INFORMATION TECHNOLOGY

Unit I
Number Systems-Decimal, Binary, Octal, Hexadecimal Conversion from one number system to another, Complements, Binary coded Decimal, Bits, Bytes and Words

Unit II
Data Processing: Data Versus Information, File Processing, Data Processing – Introduction to DBMS, Distributed Systems

Unit III
Overview of Network, Communication Processors, Communication Media, Types of Network, Network Topologies, Network Protocols, Network Architecture. Introduction to Internet & WWW, E-mail, Intranet

Unit IV
Introduction to Multimedia-Multimedia Tools-Introduction to Virtual Reality-Electronic Commerce

Unit V
1. Introduction to Computer Security-Cryptography-Computer Viruses, Bombs & Worms

Text Books
FIRST SEMESTER
MAJOR PAPER – III
PROGRAMMING CONCEPTS AND C

Unit I
Introduction to Programming – Algorithms, Flowchart, Source Program, Object Program, Compilers, Interpreters, Assemblers, Modular Programming: Structured Programming, Top-down approach, Stages of Program Development

Unit II
Introduction - C character set, Identifiers and keywords. Data type, Declarations, Expressions, statements and symbolic constants, Input-Output: getchar, putchar, scanf, printf, gets, puts, functions, Pre-processor commands, #include, define, preparing and running a complete C program. Operators and expressions: Arithmetic, Unary, Logical, bit-wise, assignments and conditional Operator, Library functions.

Unit III
Control statements: While, do-while, statement, nested loops, if-else, switch, break, continue and goto statements, comma operator. Arrays: Defining and processing. Multi dimensional arrays. Strings and operations on strings.

Unit IV

Unit V

Text Book

References
FIRST SEMESTER
ALLIED PAPER – I
MATHEMATICS FOR COMPUTER SCIENCE

Unit I


Unit II


Unit III


Unit IV


Unit V


Text Books

2. Narsingh Deo, “Graph Theory with applications to Engineering and Computer Science”, PHI, 1997. (Unit –4, 5)
FIRST SEMESTER
PRACTICAL - I
OFFICE AUTOMATION LAB

**MS-WORD**

1. Text Manipulations and Text Formatting
2. Usage of Bookmarks, Footnotes, Columns & Hyperlink
3. Usage of Header, Footer, Bulleting and Numbering & Borders and Shading
4. Usage of Tables - Sorting & Formatting
5. Usage of Spell Check, Find and replace
6. Picture insertion and alignment
7. Creation of documents using templates
8. Mail Merge, Envelopes and Labels

**MS-EXCEL**

9. Cell Editing and Formatting
10. Usage of Formulae and Built-in functions
11. Data Sorting, filter, form, subtotal, validation, Goal seek
12. Inserting Clip arts, objects, pictures and Data Filter, Validation, Subtotals
13. Usage of auditing, comments
14. Graph
15. Usage of Auto Formatting, Conditional Formatting & Style

**POWER POINT**

16. Inserting New slides, text box, object, charts, tables, pictures, movies and sound
17. Slide layout, Colour Scheme, Background and Design template
18. Preparation of organizational charts
19. Preset and custom animation, action buttons and settings, Slide Transitions and animations, view show, slide sorter view
20. Presentation using Wizards
21. Usage of Design templates
FIRST SEMESTER
PRACTICAL - II
C LAB

1. Check for Prime Number, Armstrong number, Fibonacci
2. Summation of the series: Sin (x) , Cos(x), Exp(x)
3. String Manipulations
   a. Counting number of vowels, consonants, words, white spaces in a string
   b. Reversing a string and check for palindrome
   c. Finding the number of occurrences of a sub string in a given string
   d. Sub string replacing and removal
4. Recursion
   a. Factorial
   b. Reversing a string
   c. Fibonacci Sequence
   d. Tower of Hanoi
5. Matrix Manipulations using functions and Case structure
   a. Addition & Subtraction
   b. Multiplication
   c. Transpose
   d. Check if the given matrix is a Magic square
6. Searching
7. Sorting
8. Structures
9. Pointers
10. Files
SECOND SEMESTER

ENGLISH II

Unit I

Study Skills:
   a) How to use a dictionary and a library.
   b) Effective writing -reasoning out passages.
   c) Reading Comprehension.
   d) Note-taking.

Unit II

Precise writing

Unit III


Unit IV

Commercial Correspondence (The form and arrangement of commercial letters -varieties)
   a) Trade Inquiries
   b) Orders, Offers, Quotations
   c) Confirmation and Execution of orders
   d) Refusal and Cancellation of orders
   e) Letters of Complaints
   f) Circular letters
   g) Sales letters

Unit V

Drafting
   a) Drafting of official/non-technical reports (routine and non-routine)
   b) Drafting of minutes, short speeches, memoranda, News releases, Postal cards and Reply cards, Telegrams, Mailgrams, Cablegrams, Radiograms.
   c) Application for a situation (Curriculum vitae etc.,)

Text Books

SECOND SEMESTER
MAJOR PAPER – IV
OBJECT ORIENTED PROGRAMMING

Unit I

Introduction to Object Oriented Programming (OOP), C++ programming basics, Loops and decisions: Relational operators, loops, decision, logical operators, precedence.

Unit II

Structures, enumerated data types. Functions: Simple functions, passing argument to functions, returning values from functions, reference arguments, overloaded functions, inline functions, variable and storage classes.

Unit III

Objects and classes: classes and Objects, Specifying the class, using the class, constructors, destructors, objects as function arguments, returning objects from function. Arrays: Arrays fundamentals, Arrays a Class member data, Array of objects, Strings. Operator overloading: unary operator, overloading binary operators, Data conversion, Pitfalls of Operator overloading and conversion.

Unit IV

Inheritance: Derived Base class, derived class constructors, overloading member functions, class hierarchies, public and private inheritance, levels of inheritance, multiple inheritance.Pointers: Address and pointers, pointers and arrays, pointer and functions, pointers and strings, Memory management, pointer to objects.

Unit V

Virtual functions and other functions: Virtual functions, Friend functions, Static functions, this pointer. Files and Stream: String I/O, Object I/O, I/O with multiple objects, file pointer, disk I/O with member functions.

Text book

SECOND SEMESTER
MAJOR PAPER – V
FUNDAMENTALS OF DATA STRUCTURES

Unit I
Introduction – Sparks – How to create programs – How to analyse programs -Arrays: One-dimensional Array, Two-dimensional array, Application: Sparse matrices, String, Search - Linear search, Binary search and Hashing. Two- way merge-Sorting by Selection, Sorting by exchange, sorting by insertion, sorting by partitioning

Unit II

Unit III
Linked List: The Storage pool, List representations, Anatomy of a node, Implementing the list operations, inserting into an ordered list, deleting from a list , Doubly linked list, Keeping a stack in a linked list, keeping a queue in a linked list. Polynomial- Linked list representations.

Unit IV
Trees: Basic terminology, Binary tree, representation, traversal, Binary search tree, threaded binary tree, Application [game tree].

Unit V
Graph: Definition and Terminology, representation, traversals, Connected Components and Spanning Tree, Shortest Path

Text Book
SECOND SEMESTER
ALLIED PAPER – II
PROBABILITY AND STATISTICS

Unit I
Introduction to Statistics – Nature and scope of statistical methods and their limitations - Primary and Secondary data – Classification, tabulation and diagrammatic representation of statistical data - Bar-charts, Pie-diagrams - Graphical Representation of data –Histograms, Frequency polygon, Ogives

Unit II
Measures of central tendency – Arithmetic mean, Median, Mode, Geometric mean, Harmonic mean- properties – merits and demerits – graphical location of median, quartiles, deciles, percentiles, and mode – Measures of dispersion – Quartile deviation – mean deviation & standard deviation characteristics – coefficient of dispersion – coefficient of variation – moments

Unit III

Unit IV
Events and sets – sample space – concept of probability – addition and multiplication theorem on probability – conditional probability and independence of events – Baye’s Theorem- Concept of random variable – Discrete and Continuous random variable - Mathematical expectation – Simple problems based on Binomial, Poisson and Normal distribution

Unit V
Chi-square test for independence of attributes and contingency table – Test of significance for small samples – Students t distribution – t test for the significance of single mean – t test for difference between the means of two populations – paired t test - F test for variances of two populations – Analysis of Variance for one way & two way classification (problems only)

Text Book

Marks distribution
Theory – 40%
Problems – 60%
SECOND SEMESTER
ALLIED PAPER – III
FUNDAMENTALS OF ACCOUNTANCY

Unit I


Unit II

Double entry system-personal accounts, real accounts, nominal accounts-journal-ledger-preparation of trial balance-rectification of errors.

Unit III

Subsidiary books including cash book, bank Reconciliation statement

Unit IV

Preparation of trading account-preparation of profit and loss account and balance sheet-Final accounts with adjustments

Unit V


Ratio Analysis – Liquidity ratios – activity ratios – structural ratios – Profitability ratios – dupont analysis

Text Books

3. Pillai and Baghawati, “Cost Accounting”

Mark Distribution:

Theory -20 marks
Problem - 80 marks
SECOND SEMESTER
PRACTICAL - III
OOP (C++) LAB

1. Simple Programs using decisions, loops and arrays
2. Simple functions & Inline functions
3. Function overloading & Operator Overloading
4. Usage of classes and Objects
5. Constructors and Destructors
6. Inheritance & Multiple Inheritance
7. Pointers
8. Virtual Functions, Friend functions, this pointer and Static functions
9. Files
10. Streams

SECOND SEMESTER
PRACTICAL - IV
DATA STRUCTURES LAB

1. Linear Search
2. Binary Search
3. Sort by Selection
4. Sort by Exchange
5. Quick sort
6. Stacks, Queues using arrays
7. Linked List: Insertion and Deletion
8. Polynomial addition using linked list
9. Stack and Queue using Linked List
10. Doubly linked List: Insertion and Deletion
11. Binary tree Traversal [inorder, preorder, postorder]
12. Graph Traversal [breadth first, depth first]
THIRD SEMESTER
MAJOR PAPER – VI
COMPUTER ORGANIZATION

Unit-I

NUMBER SYSTEMS : Decimal – Binary – BCD – Octal – Hexadecimal and other number systems – Binary arithmetic operations.


Unit-II


Unit-III


Unit-IV

MEMORY ORGANIZATION : Memory hierarchy – Main memory operations – memory mapping.

ADDRESSING METHODS AND MACHINE PROGRAM SEQUENCE : Instruction formats – Instruction sequencing – Addressing Modes – Stacks – subroutine and linkage.

Unit-V

INPUT-OUTPUT ORGANIZATION : Peripheral Devices – I/O Interface – Asynchronous Data Transfer – Modes of Transfer – DMA.

Text Books


Reference Book

THIRD SEMESTER
MAJOR PAPER – VII
JAVA PROGRAMMING

Unit I


Unit-II

Introducing Classes – Methods and Classes – Inheritance

Unit-III

Packages and Interfaces - Exception Handling – Multithreaded Programming

Unit-IV

String Handling – The Java I/O classes and Interfaces: File, Byte Stream, Character Stream - Applet Class - Event Handling

Unit-V


Text Book

1. Herbert Schildt “Java2 (The Complete reference) – Fourth Edition” TMH, Fifth Reprint 2002 (Chapters 2,3,4,5,6,7,8,9,10,11,12,13,17,19,20,21,22)
THIRD SEMESTER
MAJOR PAPER – VIII
COMPUTER ALGORITHMS

UNIT I

UNIT II

UNIT III

UNIT IV
Dynamic programming ; General method – multistage graphs .Backtracking – The General method – The 8 Queen problems – Sum of subsets –Graph coloring

UNIT V

TEXT BOOK

REFERENCE
THIRD SEMESTER
ALLIED PAPER – IV
FINANCIAL MANAGEMENT

Unit I


Unit II

Stock exchange – functioning – SEBI – Powers and functions of SEBI – Merchant banking underwriting – stock broking and trading systems - OTCEI

Unit III

Management of financial services – Factoring – Forfeiting – Leasing – credit and credit rating – Mergers, restructuring takeovers – venture capital financing – project financing

Unit IV


Unit V

Working capital management – Operating cycle – Inventory management – EOQ – Cash management – Accounts receivables management

Text Books

2. I. M. Pandey, “Financial Management”, Vikas New Delhi
5. Ramachandran & Srinivasan, “Management Accounting – Theory & practice”

Note:

Theory 60 Marks
Problem 40 Marks
THIRD SEMESTER
ALLIED PAPER – V
OPERATION RESEARCH

Unit I

Introduction to Operations Research - Principal components of decision problems - phases of OR study.

Unit II

Linear Programming - graphical solution - simplex method including artificial variable technique - duality.

Unit III

Transportation and assignment models - Sequencing

Unit IV

Game theory - optimal solution of two-person zero-sum games - mixed strategies - graphical solution of (2 X n) and (m X 2) games - solution of (m X n) games by linear programming.

Unit V

PERT and CPM - network diagrams - determination of the floats and critical path - probability considerations in project scheduling.

Text Books

1. Treatment as in Hamdy A.Taha “Operations Research - An introduction (III edition)”, chapters 1, 2, 3 (omit 3.4), 4 (omit 4.4, 4.5), 5 (omit 5.4), 11 (omit all sections except 11.4 only), 12 (omit 12.3, 12.5).
2. R.L. Ackoff and M.W.Sasieni "Fundamentals of O.R.". (For Sequencing)
THIRD SEMESTER
PRACTICAL V
JAVA PROGRAMMING LAB

I Application

1. Finding area and Perimeter of a circle. Use buffered reader class
2. Substring removal from a string. Use StringBuffer class
3. Determining the order of numbers generated randomly using random class
4. Implementation of Point class for image manipulation
5. Usage of calendar class and manipulation
6. String manipulation using char array
7. Database creation for storing telephone numbers and manipulation
8. Usage of vector classes
9. Implementing thread based applications and exception handling
10. Implementing Packages

II Applets

11. Working with frames and various controls
12. Dialogues and Menus
13. Panel and Layout
14. Graphics
15. Colour and Font

THIRD SEMESTER
PRACTICAL VI
FINANCIAL & STATISTICAL PACKAGES LAB

Unit – I
Financial Packages such as TALLY

Unit – II

1. Diagramatic Representation : Bar-charts, Pie-diagrams
2. Graphical Representation of data –Histograms, Frequency polygon
3. Measures of central tendency – Arithmetic mean, Median, Mode
4. Measures of dispersion
5. Skewness and Kurtosis
6. Simple correlation
7. Regression – lines of regression
8. Tests of significance based on t
9. Tests of significance based on chi-square
10. Tests of significance based on F

Note: The above mentioned statistical problems can be solved using SPSS or Excel Worksheet
FOURTH SEMESTER
MAJOR PAPER – IX
OPERATING SYSTEMS

Unit I


Unit II


Unit III


Unit IV


Unit V


Text Book

1. Stuart E.Madnick and John Donovan “Operating System”,TMH Fifth Reprint 2000. (Chapter 1,3,4,5,6)
FOURTH SEMESTER

MAJOR PAPER – X

DATA COMMUNICATION AND NETWORKS

Unit-I

Unit—II

Unit-III

Unit-IV
Networking and internet working devices: Repeaters, Bridges, Routers, Gateways, other devices, Routing algorithms, Distance vector routing, link state routing. Transport layer: Duties, Connection

Unit-V
Other protocols in the network layer: ARP, RARP, ICMP, IGMP Transport layer: TCP UDP
TCP/IP Protocol suite: PART-2 Application ayer: Client server model, BOOTP, DHCP
DNS, FTP, SMTP,,WWW, HTTP.

Text-Book

References:
1. Computer Networks – A.S Tanenbaum, Pearson Education
2. Data and Computer communications Seventh edition William Stallings PHI
FOURTH SEMESTER
MAJOR PAPER – XI
VISUAL PROGRAMMING

UNIT I


UNIT II

Adding code and using events: Using literals – data types - declaring and using variables – using the operator – subroutines and functions – looping and decision control structures – if then else structure – select structure , for next, do.. loop and while..wend.- Using intrinsic Visual basic Controls with methods and Properties: Label, Text box, Command button, Frame, Checkbox, option button, List box, Combo box, Drive List box, directory List box and file list box – Formatting controls – control arrays, Tab order

UNIT III

Functions and Procedure - Passing arguments by value and reference – Arrays, dynamic arrays – User defined data types – symbolic constants – using Dialog boxes: Input box, Message box functions - String functions, date and Time function, numeric functions

UNIT IV

Menus: creating menus, adding code to menus, using MDI forms - MDI form basic – building MDI form – creating MDI Child Forms

UNIT V


TEXT BOOKS
4. Eric A. Smith, Valar Whisler, and Hank Marquis “Visual Basic 6 programming”
FOURTH SEMESTER

MAJOR PAPER – XII

DATABASE MANAGEMENT SYSTEMS

Unit - I

Introduction to Database System- Objectives- Entities and Attributes – Data Models

Unit-II


Unit-III


Unit-IV

PL/SQL: Approach and Advantages -PL/SQL Blocks -Variables-Manipulating Data – Triggers – Procedures, functions and packages - Exception handling

Unit-V


Text Book

FOURTH SEMESTER
ALLIED PAPER – VI
PRINCIPLES OF MANAGEMENT

Unit I
Meaning, Definition and importance of Management-Functions of a Manager-Management process-Role of a manager-Social responsibility of management-Co-ordination-Meaning and scope requirements of effective co-ordination-problems in co-ordination.

Unit II
Meaning and purpose of planning – steps in planning process-limitations-Types of plans, objectives, Strategies, policies, procedures, programmes, management by objectives (MBO) – Decision making- Types of decisions-process of decision making-difficulties in decision making

Unit III
Nature and purpose of organizations-different forms of organizations-merits and demerits – linear and staff concepts- organisational charts- departmentations - bases for departmentation - product, function and territory-span of management

Unit IV
Authority-responsibility-accountability-delegation of authority-principles of delegation-unity of command – centralization and decentralization –advantages and disadvantages

Unit V

Text Book
FOURTH SEMESTER

Practical VII

VISUAL PROGRAMMING AND RDBMS LAB (SQL)

Unit – I (Visual Basic)

1. Building simple applications
2. Working with intrinsic controls and ActiveX controls
3. Application with multiple forms
4. Application with dialogs
5. Application with Menus
6. Application using data controls
7. Application using Common Dialogs
8. Drag and Drop Events
9. Database Management
10. Creating ActiveX Controls

Unit – II (SQL)

Use the concepts like data normalization, link between table by means of foreign keys and other relevant database concepts for the following applications. The implementation of each should have necessary input screen (forms) Menu-driven query processing and reports. Necessary validations should be made for each table

1. Library information system
2. Students mark sheet processing
3. Telephone directory maintenance
4. Gas booking and delivering
5. Electricity bill processing
6. Bank Transaction
7. Pay roll processing
8. Personal information system
9. Question database and conducting Quiz
10. Personal diary

FOURTH SEMESTER

Practical VIII

COMPUTER NETWORKS LAB

Implementation using JAVA

1. Text Message Sending and Receiving
2. File Transmission
3. Basic Chat Application
4. Simple Mailing Application
5. Client Server Application
FIFTH SEMESTER

MAJOR PAPER – XIII

SOFTWARE ENGINEERING

Unit-I


Unit-II


Unit-III


Unit-IV

Implementation issues: Structures Coding Techniques - Coding Style - Standards and Guidelines - Documentation guidelines - Type Checking - Scoping Rules - Concurrency Mechanisms.

Unit-V

Quality Assurance - Walkthroughs and Inspections - Static Analysis - Symbolic Execution - Unit Testing and Debugging - System Testing

Text Book

FIFTH SEMESTER
MAJOR PAPER – XIV
.NET FRAMEWORK

Unit I


Unit II

Introduction to C# - Data Type – Operators – Flow Control and Iteration – Arrays and Strings – Basics of C# Classes – Boxing and Unboxing – Reflection – Interoperability – The Preprocessors – Attributes – Name Spaces.

Unit III


Unit IV

Implementing the IC1oneable and IComparable Interfaces – Introduction to .NET Collections (including Custom Collections) – Custom Indexers, Delegates and Events – Multithreading and Synchronization – Type Reflection and Attributes – Programming the Windows Registry.

Unit V


Textbooks


References

FIFTH SEMESTER
MAJOR PAPER – XV
E-COMMERCE

Unit – I


Unit – II


Unit – III


Unit – IV


Unit – V

Internet and Web site establishment: Introduction – Technologies for Web servers – Internet tools relevant to Commerce – Internet Applications for Commerce – Internet charges – Internet Access and Architecture – Searching the Internet

Text Books

FIFTH SEMESTER
MAJOR PAPER – XVI
WEB TECHNOLOGY

Unit-I


Unit-II


Unit-III

Introduction to DHTML – Introduction to style sheets – Setting the default style sheet language – Inline style information – External Style sheets – Cascading Style sheets.

Unit-IV

Introduction to VBscript- declaring variables-adding Date and Time Function to Scripts- using Mathematical operators and functions- Using Conditional statement. Creating Functions- using Logical connectives and operators. A simple page VBscript and forms to server scripts.

Unit-V

Introduction to ASP – Database Management with ASP: Database access with ADO, working with ADO’s Connection object, Using Command objects, Working with ADO’s Recordset Object.

Text Books

1. Complete Reference: Internet
2. Elisabeth Freeman and Eric Freeman, “Head First HTML with CSS & XHTML (Head First”, O’Reilly , 2005
3. Teach Yourself VBscript in 21 Days (Sams Teach Yourself Series.) by Keith Brophy and Timothy Koets
5. Mary Jane Mara, “VB Scripts Source Book”
FIFTH SEMESTER

PRACTICAL IX

WEB TECHNOLOGY LAB

1. Usage of Simple HTML commands, Graphics and image formats and hyperlinks
2. Usage of Tables, Frames, Forms, Background Graphics and Color
3. Simple Website using HTML
4. Simple DHTML and Cascading style sheet
5. Simple VBscript
6. Web page using VBScript
7. ASP Application 1
8. ASP Application 2

FIFTH SEMESTER

PRACTICAL X

.NET LAB

Developing simple applications using C#
SIXTH SEMESTER
MAJOR PAPER – XVII
MULTIMEDIA APPLICATIONS

Unit I

Unit II

Unit III

Unit IV
Multimedia application design: Types of Multimedia systems – Virtual reality design – components of multimedia systems Multimedia authoring systems: Hypermedia application design considerations. Hypermedia Messaging: mobile messaging Hypermedia message components, Hypermedia Linking and Embedding

Unit V

Text Books

References
FIFTH SEMESTER
PRACTICAL X
Multimedia LAB

1. Creating Title
2. Clip art Logo
3. Animated Buttons and Menus
4. Text Graphics
5. Morphing
6. Shape and Motion Tween
7. Creating Web site
8. Template
9. Working with Audio and video
10. Creation of banner

Tools Required:
Adobe/Macromedia studio Ver8.0 or higher
Sound Forge Ver 6.0 or Higher
ELECTIVE I
INTRODUCTION TO WEB USER INTERFACE DESIGN

Unit – I

Unit – II

Unit – III

Unit – IV

Unit – V

Text Book :

ELECTIVE - II
IT PROJECT MANAGEMENT

Unit I

The Nature of Information Technology Projects – Conceptualising the IT Project - Developing the Project Charter and Baseline Project Plan

Unit II

The Human Side of Project Management - Defining and Managing Project Scope

Unit III:

The Work Breakdown Structure and Project Estimation - The Project Schedule and Budget - Managing Project Risk

Unit IV

Project Communication, Tracking and Reporting– IT Project Quality Management

Unit V

Managing Organizational Change, Resistance and Conflict – Project Implementation, Closure and Evaluation.

Text Book
ELECTIVE - III
COMMUNICATION SKILLS

Unit-I
The fact and meaning of communication: the need for communication, the communication process, interpersonal communication, business communication, characteristics of business communication, many meaning of communication; direct communication, non-direct of written communication, non-method of communication, non-verbal communication, visual communication, audio-visual communication, Tele-communication.

Unit-II
Objectives of communication process, types of communication-internal and external communication, formal and informal channels, the grapevine, internal communication networks, downward communication, upward communication, horizontal communication, barriers to communication and how to hurdle them.

Unit-III
Public relations advertising- concepts and types, interviews: types and techniques, meetings, committees, conference and communication problems.

Unit-IV
Business reports, memoranda and representation, business correspondence: theory-principles of business correspondence, parts of a letter, forms / formats of letters.

Unit-V
Business correspondence in practice- applications, reference, testimonials, appointments, confirmation, promotion, termination, resignation enquiries and replies, orders and acknowledgements, substitute and firm offers, complaints and adjustments, credit & status enquiries, collection or settlements, circulars, sales, agency correspondence, import &export correspondence, insurance correspondence, secretarial correspondence, public speaking, precise writing.

Text Book
2. Ramesh C. pattanchetty, “Business communication”
ELECTIVE IV
CLIENT SERVER TECHNOLOGY

Unit – I


Unit – II


Unit – III


Unit – IV

Components of Client/Server Application - Connectivity – Open System Interconnect – Communication Interface technology – IPC

Unit – V


Text Book


Reference

1. Robert Orfali, Dan Harkey and Jerri Edwards, “Essentials of client/server computing”
ELECTIVE - V
WEB SERVICES

UNIT – I

UNIT – II

UNIT – III

UNIT – IV

UNIT V

TEXT BOOK


REFERENCE BOOK

2. Sanjiva weerawarana, Francisco Curbera,” Web Services platform architecture “, Prentice Hall, 2005
ELECTIVE - VI

BIO-INFORMATICS

Unit – I


Unit – II

Genome Information Resources - DNA Sequence data base – Specialised genomic Resources. DNA Sequence analysis : Why analyse DNA? – Gene structure – Features of DNA sequence analysis – Issues in the interpretation and EST search – Approach of Gene hunting – Cell CDNA libraries and ESTs – Approaches to EST analysis – Effect of EST data on DNA data base examples of EST analysis.

Unit – III


Unit – IV


Unit – V


Text Book


ELECTIVE VII
MOBILE COMMUNICATION

Unit I

Introduction – Medium access control – Telecommunication systems – Satellite systems – Broadcast systems.

Unit II


Unit III

Adhoc Networks – Characteristics – Performance issues – Routing in mobile hosts.

Unit IV


Unit V


Text books

ELECTIVE VIII
NETWORK SECURITY

Unit – I


Unit – II

Public key encryption- RSA- elliptic curve cryptography-number theory concepts

Unit – III

Message authentication-hash functions- digest functions-digital signatures – authentication protocols

Unit – IV

Network security practice-authentication applications-electronic mail security – IP security Web security

Unit – V

System security-firewalls-current standards

Text Book:


Reference:

ELECTIVE IX
DATA WAREHOUSING AND MINING

Unit – I
Evolution of database technology – Introduction to Data warehousing and data mining

Unit – II
Data warehouse: Differences between operational database systems and data warehouses, multidimensional data model, data warehouse architecture, Data warehouse implementation

Unit – III
Data mining: Data preprocessing, Data mining primitives, languages & system architectures, concept description: characterization and comparison, Mining association rules, classification and prediction

Unit – IV
Applications and trends in data warehousing and data mining

Unit – V
Introduction to Microsoft's OLE DB for data mining, DBMiner.

Text Books
2. Jiawei Han, et.al., “Data mining: concepts and techniques”, Morgan Kaufmann publishers, 2001.
ELECTIVE X
SOFTWARE TESTING

Unit I


Unit II


Unit III


Unit IV


Unit V


References

UNIT-I

UNIT-II
Representation: Propositional Logic – First Order Logic – Frame Systems and Semantic Networks

UNIT-III

UNIT-IV

UNIT-V

TEXTBOOK

REFERENCE BOOKS
ELECTIVE XII

DISTRIBUTED DATABASE MANAGEMENT SYSTEM

Unit 1


Unit-2


Unit-3


Unit-4


Unit-5


Recommended Texts