SRM UNIVERSITY
Faculty of Science & Humanities
BACHELOR OF COMPUTER APPLICATIONS
CHOICE BASED CREDIT SYSTEM
REGULATIONS
(W.e.f. 2011 - 2012)

1. Aim of the Course

The course strives to inculcate job-oriented and value based quality education in Information Technology and Commercial Application Development. . At the end of the course, the students will be well-versed, particularly in core subjects with quality in inter-personal and professional skills.

2. Eligibility for Admission

Candidates for admission to the first year of the Under Graduate Degree courses shall be required to have passed the Higher Secondary Examinations (Academic or Vocational Stream) conducted by the Government of Tamil Nadu or an Examination accepted as equivalent with Mathematics or Business Mathematics.

3. Duration of the Course

The Course duration shall be for three years consisting of six semesters. In order to be eligible for the award of the degree the candidate shall successfully complete the course in a maximum period of five years from the date of enrolment for the first semester of the course.

4. Choice Based Credit System

The University follows the 'Choice Based Credit System (CBCS)' for all its programmes. Each credit is worth 12 hours of student study time, comprising all learning activities. Thus a five-credit course involves 60 study hours. This helps the student to understand the academic effort and to successfully complete a course.

A candidate shall be eligible for the award of the degree only if he/she has undergone the prescribed course of study in the University for a period of three academic years and passed the examination of all the six semesters.

5. Structure of the Course and Evaluation Pattern

Internal Marks: 50 External Marks: 50

The duration of University examination for both theory and practical subjects shall be 3 hours. The maximum marks for each theory and practical course is 100. Continues Internal Assessment (CIA) will be 50. The university theory examination will be conducted for 100 marks, which will be then converted to 50 in ordered to add with continues internal assessment to make 100 marks for the course.

For the conduct of University examinations in practical, the question paper for the practical examination will be set by both internal and external examiners appointed by the University.

6. Procedures for Awarding Marks for Internal Assessment

THEORY COURSES

For regularity and discipline	- 10 Marks
For two assignment (Equal weightage)	- 10 Marks
For two tests to be conducted (Equal weightage)	- 20 Marks
Model examination	- 10 Marks
Total	- 50 Marks

PRACTICAL COURSES

For regularity and discipline	- 10 Marks
Completion of all Experiments prescribed for the course	- 20 Marks
Observation Record	- 10 Marks
For model Examination at the end of the Semester	- 10 Marks
Total	- 50 Marks

In the case of CIA, a candidate who secures not less than 40% of total marks prescribed for any course shall be declared to have passed for that course, failing which the candidate has to redo the academic activities prescribed for the continuous internal assessment (CIA).

7. Requirements for the completion of the semester

The candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirements for the completion of the semester.

1. He/ She secures not less than 75% of overall attendance in that semester taking into account the total no of periods in all courses put together attended by the candidate as against the total no of periods in all courses offered during that semester. Condonation of attendance up to 10% is permitted on medical grounds. Relaxation in attendance is permitted up to 10% for the student who represents the university in sports and games. The above two relaxation cannot be taken concurrently.

2. He / She earn a progress certificate from the head of the institution for having satisfactorily completed all the courses pertaining to that semester as judged by Internal Assessment. A Student is expected to have scored not less than 40% in internal Assessment.

3. His / Her conduct has been satisfactory throughout the semester. Candidates who do not complete the semester will not be permitted to write the end semester Examination and are not permitted to go the next semester. They are required to repeat the incomplete semester in the next academic year.

8. Requirements for Proceeding to Subsequent Semester

i. Candidates shall register their name for the First Semester Examination after the admission in the U.G. course.
ii. Candidates shall be permitted to proceed from the First Semester up to Final Semester irrespective of their failure in any of the Semester examinations subject to the condition that the candidates should register for all the arrear subjects of earlier semesters along with current (subsequent) semester subjects.
iii. Candidates shall be eligible to go to subsequent semester, only if they earn sufficient attendance as prescribed thereof by the University from time to time.

Provided in the case of candidate earning less than 50% of attendance in any one of the semesters due to any extraordinary circumstance such as medical grounds, such candidates who shall produce Medical Certificate issued by the Authorized Medical Attendant (AMA), duly certified by the Dean, Faculty of Science & Humanities, shall be permitted to proceed to the next semester and to complete the course of study. Such candidates will have to repeat the missed semester by rejoining after completion of final semester of the course, after paying the fee for the break of study as prescribed by the University from time to time.

9. Examinations

1. The end semester examinations will ordinarily be conducted during October to December in the odd semesters and during March to May in the even semesters. For all the theory courses question papers will be set by external examiners and valued by external and/or internal examiners.

2. All practical examinations including the project work viva voce will be conducted by internal & External examiners appointed by the University

3. The project work report/thesis will be evaluated by the External examiner and the thesis viva Board consists of HOD, Internal Examiner (Guide), and External Examiner.

10. Software Project – Final Semester

Total Marks: 100

- The Project work can be either carried out in any Industry/University/Institute.
- A Coordinator will be appointed by the HOD to coordinate the Project Work.
- Internal guides from the department will be assigned to the students.
    - As soon as a student gets the project work, he/she has to sent the contact details of the organization and the external guide to the department Project title and the Platform
    - Address of the Organization (Phone, Fax number, E-mail address, URL)
    - Address for Communication
    - Telephone / Mobile number (Personal) / Personal E-mail ID.
- Periodically (weekly) the students should submit project Task Report to their internal guide.
- Two Reviews will be conducted before the Final Viva-Voce.
- The Project work should be an independent one; if the project is a part of a bigger project, the student's work should have a few independent modules.
- If more than one student is working on parts of the same project (big enough to share) the report of each student should be different and not two copies of the same report.

Evaluation Scheme

- Internal Guide (Continuous Assessment) 40 Marks
- External Examiner Project Report 40 Marks

- An External Examiner will conduct the Viva Voce along with the respective Internal Guide for 10 marks each.
- If a student fails in final semester software project then the student has to perform the set of activities required for it. The student has to appear for the review fixed by the department and should also appear for the semester exam viva voce.

11. Passing Minimum

1. A candidate shall be declared to have passed in each paper / practical / Mini Project and Viva-voce, if he / she secures not less than 40% of marks (the continuous internal assessment (CIA) and the University examinations (External) put together), provided a minimum of 40% of marks secured in the University examination and a minimum of 40% in Continuous Internal Assessment.

2. If a candidate fails to secure a pass in a particular course, it is mandatory that he/she shall register and reappear for the examination in that course during the next semester when examination is conducted in that course. He / She should continue to register and reappear for the examination till he/she secures a pass. However, the internal assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts. If a candidate fails to secure 40% of the marks prescribed in Continuous Internal Assessment, he has to redo the academic activities prescribed for the same.

12. Award of Letter Grade

All assessment of course will be done on absolute marks basis. However for the purpose of the reporting the performance of a candidate, letter grades, each carrying certain points, will be awarded as per the range of total marks (out of 100) obtained by the candidate as detailed below.

Range of total marks	Letter Grade	Grade Points
90 – 100	S	10
80 – 89	A	9
70 – 79	B	8
60 – 69	C	7
50 – 59	D	6
40 – 49	E	5
0 – 39	F	0
Incomplete	I	0
Withdrawal	W	0

“F” denoted failure in the course
“I” denotes incomplete and hence prevented from writing end semester examination.
“W” denotes withdrawal from the course. After results are declared, Grade sheets will be issued to each student, containing the list of courses enrolled during semester and the grade scored the grade point average (GPA) for the semester and the Cumulative Grade point average (CGPA) of all courses enrolled from first semester onwards.

GPA is the ratio of the sum of the products of the number of credits of courses registered and the points corresponding to the grades scored in those courses, taken for all the courses, to the sum of the number of credits of all the courses in the semester.

GPA = (C*GP)/ C Where CGPA will be calculated in a similar manner, considering all the courses enrolled from first semester.

13. Eligibility for the Award of the Degree

A Student shall be declared to be eligible for the award of the Degree provided if,

1. The student has successfully completed the course requirements and has passed all the prescribed examinations in all the six semesters within a maximum period of five years reckoned from the commencement of the first semester to which the candidate was admitted.
2. No disciplinary action is pending against him/her.

14. Classification of the Degree Award

1. A candidate who qualifies for the award of the degree having passed the examination in all the courses in his/her first appearance securing a CGPA of not less than 8.00 shall be declared to have passed the examination in First Class with distinction

2. A candidate who qualifies for the award of the degree having passed the examination in all the courses within six semesters from the date of joining for study securing a CGPA of not less than 6.5 shall be declared to have passed the examination in First class

3. A candidate who qualifies for the award of the degree having passed the examination in all the courses securing a CGPA of not less than 5.0 shall be declared to have passed the examination in Second class

4. All other candidates who qualify for the award of the degree shall be declared to have passed the examination in Third class

5. A candidate who is absent in semester examination in a course / project work after having enrolled for the same shall be considered to have appeared in that examination purpose for classification.

6. A candidate can apply for revaluation of his / her semester examination answer paper in a theory course, within 2 weeks from the declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Head of the Department. The Controller of Examination will arrange for the revaluation and the results will be intimated to candidate concerned through the Head of the Department.

15. Pattern of Question Paper (Theory)

Time 3 hours Max Marks 100

Part – A (10 * 2 = 20 Marks)

(2 Question from each unit) Theory

Part – B (5 * 16 = 80 Marks)

(1 Set from each Unit (Either or Pattern)) Problems

Marks secured by the candidate will be converted to 50 to make the aggregate 100, while adding with continuous Internal Assessment 50.

16. Pattern of Question Paper (Practical)

Time: 3 Hours Max: 100 Marks.

One compulsory problem (may contain subdivisions) to be solved within 3 hours. The External Examiner will set a question paper on the spot with the help of the question bank.

Each student will get a single question to be answered. The question will have two subdivisions (2 x 20 = 40) and 10 for Record. No more than three candidates should get the same question in a batch.

17. Temporary Break of Study from a Programme

1) A candidate is not normally permitted to temporarily break study. However if a candidate intends to temporarily discontinue the programme in the middle for valid reasons (Such as accident or hospitalization due to prolonged ill health) and rejoin the programme in a later year he/she shall apply to the Head of the Institution in advance but not later than the last date for registering for the final examinations of the year in question. Such applications should be routed through the Head of the department and the Head of the institution stating the reason for break of study.

2) The Candidate who rejoins the programme after the break shall be governed by the rules and regulations in force at the time of rejoining.

3) The duration specified for passing all the courses for the purpose of classification vide shall be increased by the period of such break of study permitted.

4) The total period for completion of the programme should be reckoned from the commencement of the first semester to which the candidate was admitted and shall not

exceed the maximum period specified in clause irrespective of the period of break of study in order that he/she may be eligible for the award of the degree.

5) If any student is detained for want of requisite attendance, progress and good conduct, the period spent in that semester shall not be considered as 'Break of Study'.

18. Discipline

Every student is required to observe disciplined and decorous behavior both inside and outside the college and not to indulge in any activity which will tend to bring down the prestige of the University/College. Boys should wear decent dresses. No casual wear like T – shirts or jeans pant is permitted. Girls shall wear decent dresses like churidars with Thuppattas and sarees.

19. Revision of Regulation and Curriculum

The University may from time to time revise, amend or change the regulations, scheme of examinations and syllabi as found necessary.

20. Authority of Board of Studies

The Board of Studies has the full authority to change the syllabus any time according to IT trend.

21. Procedure in Event of Failure

1. If a candidate fails in a particular subject (Other than project work) he/she may appear for the university examination in that subject in subsequent semesters and obtain pass marks.

2. In the event of failure in project work, the candidates will reregister for project work and redo the project work in a subsequent semester and resubmit the dissertation a fresh for evaluation. The internal assessment marks will be freshly allotted – in this Case.

22. Structure of the Course

The main subjects of study for Under Graduate Degree Course shall consist of the following.

1. Foundation Courses: The course shall comprise the study of,
a) Part-I Tamil / Hindi / French
b) Part-II English
2. Core Courses:
a) Main Subject
b) Allied Subjects
c) Application Oriented subjects related to the main subject of study and practical etc.

BCA DEGREE
STRUCUTRE OF THE COURSE

Course Code	Course Name	L	P	C
	SEMESTER – I			
SHCA101	Language – I (Tamil / Hindi / French)	5	0	4
SHCA102	English -I	5	0	4
SHCA103	Structured and Object Oriented Programming	5	0	4
SHCA104	Problem Solving Techniques	5	0	4
SHCA105	Mathematics – I	5	0	5
SHCA106	Programming Lab	0	3	2
SHCA107	Communication Skills **(Internal Assessment Only)**	2	0	2
	SEMESTER – II			
SHCA201	Language – II (Tamil / Hindi / French)	5	0	4
SHCA202	English -II	5	0	4
SHCA203	Data Structures	5	0	4
SHCA204	Operating Systems	5	0	4
SHCA205	Mathematics – II	5	0	5
SHCA206	Data Structures Lab Using C++	0	3	2
SHCA207	Value Education **(Internal Assessment Only)**	2	0	2
	SEMESTER - III			
SHCA301	Programming in Java	5	0	4
SHCA302	Computer Graphics and Multimedia	5	0	4
SHCA303	Design and Analysis of Algorithms	5	0	4
SHCA304	Statistical and Numerical Methods	5	0	5
SHCA305	Java Lab	0	4	2
SHCA306	Graphic Lab	0	4	2
SHCA307	Environmental Science **(Internal Assessment Only)**	2	0	2
	SEMESTER - IV			
SHCA401	Database Management Systems	5	0	5
SHCA402	Advanced enterprise java programming	5	0	4
SHCA403	Software Engineering	5	0	4
SHCA404	Resource management techniques	5	0	5
SHCA405	Database Management System Lab	0	4	2
SHCA406	Advanced enterprise java programming Lab	0	4	2
SHCA407	SOFT Skills **(Internal Assessment Only)**	2	0	2

SEMESTER - V				
SHCA501	Computer Networks	5	0	5
SHCA502	Elective – I	5	0	5
SHCA503	Web Technology	5	0	4
SHCA504	Non Major Elective	5	0	5
SHCA505	Network Lab	0	4	2
SHCA506	Web Technology Lab	0	4	2
SHCA507	Human Rights Education **(Internal Assessment Only)**	2	0	2
SEMESTER -VI				
SHCA601	Open Source	5	0	4
SHCA602	Elective – II	5	0	5
SHCA603	.Net Programming	5	0	4
SHCA604	Cryptography and Network Security	5	0	5
SHCA605	.Net Lab	0	4	2
SHCA606	Open Source Lab	0	4	2
SHCA607	Quantitative Aptitude Development **(Internal Assessment Only)**	2	0	2

List of Elective Courses:

Elective I	**Elective II**
1. Object Oriented Analysis and Design 2. Software Testing 3. Soft Computing	1. Software Metrics 2. E – Commerce 3. AI and Expert System
Non Major Elective 1. Accounting and financial management 2. Organizational Behavior 3. Bio - informatics	

Skill Development Courses (Internal Assessment Only):
Maximum Marks: 100

Semester I - Communications Skills
Semester II – Value Education
Semester III - Environmental Science
Semester IV - SOFT Skills
Semester V - Human Rights Education
Semester VI – Quantitative Aptitude Development

Note:

The Assessment of the above courses will be done by assigning seminars, assignments, group discussions, Class Tests and etc.

I YEAR – I SEMESTER
STRUCTURED AND OBJECT ORIENTED PROGRAMMING

Unit – I: STRUCTURED PROGRAMMING – I

Programming Languages – Programming Paradigms - Background of C++ - First Program in C++ - Structure of C++ Program - Data Types - Basic Data Types – User Defined Data Types– Expressions – Tokens, Keywords and Identifiers – Constants and Variables - Operators– Statements – Assignment - Input Output Objects – Manipulators -Control Structures – Selection Statement – Iteration Statements – Arrays and Strings.

Unit – II: STRUCTURED PROGRAMMING - II

Structures, Unions and Enumerations – Functions – Function Prototyping – Call by Value, Call by Reference- Inline Functions- Recursion - Pointers - Default Arguments - Passing arrays to Functions – Passing Structures to Functions – Function Overloading – Using Pointers as Function Arguments and Parameters - File I/O – File Classes – File Operations – Random Access

Unit – III: CLASSES AND OBJECTS

Characteristics of Object Orient Programming - Classes and Objects – Data Members - Member Functions - Constructors and Destructors – Friend Functions – Friend Classes – Static Class Members – Object Pointers.

Unit – IV: INHERITANCES AND POLYMORPHISM

Operator Overloading – Inheritance – Protected Members – Inheriting Multiple Base Classes – Virtual Base Classes – Polymorphism – Virtual Functions – Virtual Base Classes – Dynamic versus Static Binding.

Unit – V: TEMPLATES AND EXCEPTION HANDLING

Templates – Generic Functions – Applying Generic Functions – Generic Classes - Exception handling – Standard Template Library – Container Classes – Lists – Maps – Algorithms – String.

TEXTBOOK

1. Balagurusamy E, “Object Oriented Programming with C++”, Tata McGraw Hill, 2006.

REFERENCES

1. Andrew C. Staugaard JR, “Structured and Object-Oriented Problem Solving Using C++”, Third Edition, Prentice Hall, 2002
2. Herbert Schildt, “C++: The Complete Reference”, Third Edition, Tata McGraw Hill, 1999
3. Yashavant Kanethkar, “Let us C++”, BPB Publications, 1999.
4. Bruce Eckel, “Thinking in C++”, Second Edition, Pearson Education, 2001.

I YEAR – I SEMESTER
PROBLEM SOLVING TECHNIQUES

Unit – I: PROGRAMMING TECHNIQUES

Steps Involved in Computer Programming – Problem Definition – Outlining The Solution – Flow Chart – Developing Algorithms – Efficiency of Algorithms - Analysis of Algorithms.

Unit – II: FUNDAMENTAL ALGORITHMS

Exchanging the Values – Counting – Summation of Set of Number – Factorial Computation – Sine Computation – Fibonacci Sequence – Reversing the Digits of an Integer – Base Conversion – Character to Number Conversion.

Unit – III: FACTORING METHODS

Finding the Square Root of a Number – Smallest Divisor of an Integer – GCD of Two Integers – Generating Prime Numbers – Computing the Prime Factors of an Integer – Generation of Pseudo-Random Numbers – Raising a Number to a Large Power – Computing the Nth Fibonacci Number.

Unit – IV: ARRAY TECHNIQUES

Array Order Reversal – Array Counting or Histogramming – Finding the Maximum Number in a Set – Removal of Duplicates from an Ordered Array – Partitioning an Array – Finding the k^{th} Smallest Element – Longest Monotone Subsequence.

Unit – V: MERGING, SORTING AND SEARCHING

Two Way Merge - Sorting by Selection, Exchange, Insertion, and Partitioning - Binary Search – Hash Searching.

TEXTBOOK

Dromey R G, "How to Solve it by Computer", Prentice Hall of India, 1997

REFERENCES

Michael Schneider, Steven W. Weingart, David M. Perlman, "An Introduction to Programming and Problem Solving with Pascal", Wiley Eastern Limited, New Delhi, 1982.

Harold Abelson and Gerald Sussman with Julie Sussman, "Structure and Interpretation of Computer Programs", MIT Press, 1985.

I YEAR – I SEMESTER
MATHEMATICS - I

UNIT – I:

Sets – Relations– functions.

UNIT – II:

Mathematical connectives – Tautology – Contradiction – Normal forms – PDNE – PCNF – Rule of inference.

UNIT – III:

THEORY OF EQUATIONS: Polynomial equations, irrational roots, complex roots, Reciprocal equations, Approximation of roots of a polynomial equation by Newton and Horner's methods.

UNIT –IV:

MATRICES: Symmetric, skew symmetric, Hermitian, skew Hermitian,Orthogonal,Unitary matrices – Cayley Hamilton Theorem –Eigen values– Eigen vectors – solving the equations using cramers rule.

UNIT – V:

Differentiation: Successive differentiation – Leibnitz theorem – maxima and minima – Radius of curvature (Cartesian co– or) – partial differentiation – Euler's theorem.

Books for study and reference: Treatment as in

P.R.Vittal : MATHEMATICAL FOUNDATION

P.R.Vittal : ALLIED MATHEMATICS

Unit I: Chaps.2, 3, 4
UnitII: Chap.1
Unit III: Chap.8-Sec.8.1-8.24, 8.98-8.120
UnitIV: Chap.11, 12, 15(15.1-15.20)
Unit-V: Chap.6 in "Allied Mathematics" by P.R.Vittal

I YEAR – I SEMESTER
PROGRAMMING LAB

1. Data types, Expressions, Control structures and I/O
2. Arrays
3. String Handling
4. Functions, Inline functions and default arguments
5. Function overloading
6. Pointers
7. Classes and Objects
8. Friend functions and friend classes
9. Static members
10. Operator Overloading
11. Inheritance
12. Virtual functions
13. Exception Handling
14. Files
15. Templates and STL

Note: Practical exercises should be in the ratio of 40% for Structured Programming and 60% for Object-oriented programming.

I YEAR – II SEMESTER
DATA STRUCTURES

Unit – I: ORDERED LIST AND POLYNOMIALS

Abstract Data Types – Arrays - Representation of Arrays - Operations on Arrays - Ordered List- Polynomial: Representation, Addition, and Multiplication -Sparse Matrices.

Unit – II: LISTS, STACK AND QUEUE

Singly Linked Lists - Circular Linked Lists - Doubly Linked Lists - General Lists-Stacks – Queues - Evaluation of Expressions-Multiple Stacks and Queues.

Unit – III: TREES

Trees - Binary Trees - Binary Tree Traversals - Binary Tree Representations - Binary Search Trees - Threaded Binary Trees – Additional Binary Tree Operations- Heaps –Selection Trees - Set Representation.

Unit – IV: GRAPHS

Representations of Graphs - Graphs Implementation - Graph Traversals - Application of Graph Traversals - Minimum Cost Spanning Trees - Shortest path Problems – Activity Networks.

Unit – V: HASHING AND ADVANCED TREES

Symbol Table – Static Hashing : Hash Tables – Hashing Functions – Overflow Handling - AVL Trees– 2-3 Trees - Red-Black Trees – B-Trees - Splay Trees.

TEXT BOOKS

1. E.Horwitz, S. Sahni and Mehta, "Fundamentals of Data Structures in C++", Galgotia, 1999.
2. Gregory L. Heileman, "Data Structures, Algorithms and object Oriented Programming", McGraw Hill International Edition, 1996.

REFERENCES

1. Robert Kruse & Clovis L. Tondo, "Data Structures and Program Design in C"**,** Prentice Hall, 2nd Edition, 1991.
2. Weiss, "Data Structures and Algorithm Analysis in C", Addison Wesley, 2nd Edition, 1997.

I YEAR – II SEMESTER
OPERATING SYSTEMS

Unit – I: INTRODUCTION

Definition -Mainframe System-Desktop Systems-Multi processor System-Distributed-Clustered-Real time Systems-Handheld Systems-Operating System Structure-System Components-Services-System Calls-System Programs-System Design and Implementation

Unit – II: PROCESS MANAGEMENT

Concepts-Process Scheduling-Operations on Processes-Co-operating Processes-Inter Process Communication-CPU Scheduling-Scheduling Concepts-Criteria-Scheduling Algorithms-Multiprocessor Scheduling-Real time Scheduling

Unit – III: PROCESS SYNCHRONIZATION

Critical Section-Synchronization Hardware-Semaphores-Problems of Synchronization-Critical Regions-Monitors-Deadlocks-Characterization-Handling Deadlocks-Deadlock Prevention-Avoidance-Detection-Deadlock Recovery

Unit – IV: MEMORY MANAGEMENT

Storage Hierarchy-Storage Management Strategies-Contiguous-Non Contiguous Storage Allocation-Single User-Fixed Partition-Variable Partition-Swapping-Virtual Memory-Basic Concepts-Multilevel Organization-Block Mapping-Paging-Segmentation-Page Replacement Methods-Locality-Working Sets

Unit – V: I/O AND FILE SYSTEMS

Disk Scheduling-File Concepts-File System Structure-Access Methods-Directory Structure-Protection-Directory Implementation-Allocation Methods-Free Space Management-Case Study: Linux System

TEXT BOOK

Silberschatz and Galvin, "Operating System Concepts", 6th Edition, John Wiley & Sons, Inc., 2004

REFERENCES

Milankovic M, "Operating System Concepts and Design", 2nd Edition, McGraw Hill, 1992

P.C.Bhatt, "An Introduction to Operating Systems-Concepts and Practice", Prentice Hall Of India, 2004

H.M.Deitel, "An Introduction to Operating Systems", 2nd Edition, Pearson Education, 2002

I YEAR – II SEMESTER
MATHEMATICS - II

UNIT-I:

Integral calculus- polynomial and irrational function- Bernoulli's formula – reduction formula - $\int \sin^n x\, dx$ - $\int \cos^n x\, dx$.

UNIT- II:

Fourier series [0,2л] and [-л, л] – multiple integral – Double- change of order of integration.

UNIT – III:

Differential Equation: Second order Differential Equation with constant coefficient. Partial Differential Equation: Eliminating arbitrary constants and functions – four standard types.

UNIT – IV:

Laplace Transformation – basic properties and simple problems – L $[e^{at}f(t)]$ – L $[t^n f(t)]$- L$[e^{at}t\, f(t)]$ –L$[f(t)/t]$

UNIT – V:

Inverse Laplace transformation – solving differential equation using Laplace Transformation.

BOOKS FOR REFERENCE:

1. A.SINGARAVELU: ALLIED MATHEMATICS

2. A. MANICKAVASAGAM PILLAI AND NARAYANAN: ANCILLARY MATHEMATICS.

Treatment as in "Mathematical Foundation" by DR.P.R.VITTAL

Unit-I: Chap.15 (15.1 to 15.28), Chap.16 (16.1 to 16.8)
Unit-II: Chap.21 (21.1 to 21.40), Chap.20 (20.1 to 20.17, 20.23 to 30.32)
Unit III: Chap.23 (23.1 to 23.36), Chap.26 (26.1 to 26.40)
Unit IV: Chap.27 (27.1 to 27.19)
Unit-V: Chap.27 (27.25 to 27.54)

I YEAR – II SEMESTER
DATA STRUCTURES LAB USING C++

1. Write a programs to implement the following using an array.
   a) Stack ADT b) Queue ADT
2. Write a programs to implement the following using a singly linked list.
   a) Stack ADT b) Queue ADT
3. Write a program to perform the following operations:
   Insert an element into a binary search tree. b) Delete an element from a binary search tree. c) Search for a key element in a binary search tree.
4. Write a program to perform the following operations on B-Trees and AVL-trees: a) Insertion. b) Deletion.
5. Write a program to solve the single source shortest path problem. (Note: Use Dijkstra‟s algorithm).
6. Write a program that uses non-recursive functions to traverse a binary tree in: a) Pre-order b) In-order c) Post-order
7. Write a program for sorting a given list of elements in ascending order using the following sorting methods: a) Quick sort. b) Merge sort.
8. Consider the problem of eight queens on an (8x8) chessboard. Two queens are said to attack each other if they are on the same row, column, or diagonal. Write a C++ program that implements backtracking algorithm to solve the problem i.e. place eight non-attacking queens on the board.
9. Write a program to implement dynamic programming algorithm to solve the all pairs shortest path problem.
10. Write a program that uses dynamic programming algorithm to solve the optimal binary search tree problem.

II YEAR – III SEMESTER

PROGRAMMING IN JAVA

Unit I

Java Basics History of Java, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

Unit II

Inheritance – Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes.

Unit III

Packages and Interfaces : Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces. Exploring packages – Java.io, java.util.

Unit IV

Exception handling and multithreading - Concepts of exception handling, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

Unit V

Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes. Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

BOOKS FOR STUDY:

1. Herbert Schildt, ”Java; The complete reference”, 7th Editon, TMH.
2. C. Muthu “Programming with JAVA"' Thomson' 2005.

REFERENCES:

1. J. Nino and F.A. Hosch, John wiley & sons “An Introduction to programming and OO design using Java”.

2.T. Budd, “An Introduction to OOP”, Second Edition, Pearson education.

II YEAR – III SEMESTER

COMPUTER GRAPHICS AND MULTIMEDIA

Unit I

Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. Attributes of Output Primitives: Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.

Unit II

2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. 2D Viewing: The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations.

Unit III:

Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats. Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

Unit IV:

Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission– Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia –Voice Recognition and Response - Audio Processing Software.

Unit V:

Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – PC Video – Video File Formats and CODECs – Video Editing – Video Editing Software. Animation: Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. Compression: MPEG-1 Audio – MPEG-1 Video - MPEG-2Audio – MPEG-2 Video.

BOOK FOR STUDY:

1. Donald Hearn, M.Pauline Baker, "Computer Graphics" , 2nd edition, PHI.
2. Ranjan Parekh, "Principles of Multimedia" , 2007, TMH

REFERENCES:

1. Amarendra N Sinha, Arun D Udai, "Computer Graphics", TMH.
2. Tay Vaughan, " Multimedia: Making it Work" , 7th edition, TMH.

II YEAR – III SEMESTER

DESIGN AND ANALYSIS OF ALGORITHM

Unit I

Introduction – Notion of Algorithm – Fundamentals of Algorithmic Solving – Important Problem types – Fundamentals of the Analysis Framework – Asymptotic Notations and Basic Efficiency Classes.

Unit II

Mathematical Analysis of Non-recursive Algorithm – Mathematical Analysis of Recursive Algorithm – Example: Fibonacci Numbers – Empirical Analysis of Algorithms – Algorithm Visualization.

Unit III

Brute Force – Selection Sort and Bubble Sort – Sequential Search and Brute-force string matching – Divide and conquer – Merge sort – Quick Sort – Binary Search – Binary tree-Traversal and Related Properties – Decrease and Conquer – Insertion Sort – Depth first Search and Breadth First Search.

Unit IV

Transform and conquer – Presorting – Balanced Search trees – AVL Trees – Heaps and Heap sort – Dynamic Programming – Warshall's and Floyd's Algorithm – Optimal Binary Search trees – Greedy Techniques – Prim's Algorithm – Kruskal's Algorithm – Dijkstra's Algorithm – Huffman trees.

Unit V

Backtracking – n-Queen's Problem – Hamiltonian Circuit problem – Subset-Sum problem – Branch and bound – Assignment problem – Knapsack problem – Traveling salesman problem.

BOOKS FOR STUDY:

1. Anany Levitin, “Introduction to the Design and Analysis of Algorithm”, Pearson Education Asia, 2003.

REFERENCES :

1. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, “Introduction to Algorithms”, PHI Pvt. Ltd., 2001
2. Sara Baase and Allen Van Gelder, “Computer Algorithms - Introduction to Design and Analysis”, Pearson Education Asia, 2003.
3. A.V.Aho, J.E. Hopcroft and J.D.Ullman, “The Design and Analysis Of Computer Algorithms”, Pearson Education Asia, 2003.

II YEAR – III SEMESTER

STATISTICAL AND NUMERICAL METHODS

UNIT – I:

Roots of Equations: Graphical Method – False – Position Method – Fixed – Point Iteration – Newton – Raphson Method – Secant Method.

UNIT – II:

Gauss Elimination Gauss– Jordan - Gauss-Jacobi - Gauss - seidel, finding matrix inverse by Gauss - Elimination and Gauss-Jordan.

UNIT – III:

Numerical Differentiation – Integration : Trapezoidal Rule – Simpson's 1/3 rdand 3/8th Rule – Romberg integration – Differential equations: Taylors method – Euler's method – Runge-kutta 2nd and 4th order methods.

UNIT – IV:

Diagrammatic and Graphical representation of Numerical Data – Formation of frequency distribution – Histogram, Cumulative Frequency – Polygon and Ogives – Measures of central tendencies – Mean ,Median ,Mode – Measures of dispersion – Mean deviation, standard deviation, variance , Quartile deviation and coefficient of variation.

UNIT –V:

Probability of an event – Finitely additive probability space addition and multiplication theorems – Independence of events – conditional probability – Bayes theorem.

Books for Study and reference:

A.Singaravelu : Numerical Methods
Kandasamy and Thilagavathy : Numerical Methods
T.Veerarajan : Numerical Methods
S.S.Sastry : Introductory Methods of Numerical Analysis
P.R.Vittal and V.Malini : Statistical and Numerical methods

Treatment as in "Numerical Method by T.Veerarajan and others"

Unit I : chapter 3(3.4,3.5,3.6,3.10)
Unit II : Chapter 4(4.2.,.4.3)

Treatment as in "Introductory Methods of Numerical Analysis by S.S.Sastry"

Unit III : chapter 5 (5.4.1,5.4.2,5.4.3,5.4.6) and Chapter 7 (7.2,7.4,7.4.1,7.4.2,7.5)

Treatment as in "Statistical and Numerical methods by P.R.Vittal and V.Malini"

Unit IV and Unit V : Chapter 4,5,8 (4.1.4.2,4.3,5.1,5.6,5.7,5.8,8.1,8.2,8.9,8.10)

II YEAR – III SEMESTER

JAVA LAB

1. Write a Java program that prints all real solutions to the quadratic equation ax2 + bx +c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b2 -4ac is negative, display a message stating that there are no real solutions.
2. The Fibonacci sequence is defined by the following rule: The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.
3. a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.

   b) Write a Java program to multiply two given matrices.

   c) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

   d) Write a Java program that checks whether a given string is a palindrome or not.
   Ex: MADAM is a palindrome.

4. a) Write a Java program for sorting a given list of names in ascending order.

   b) Write a Java program that reads a file name from the user, and then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

   c) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

   d) Write a Java program that displays the number of characters, lines and words in a text file.

5. Write a program that accepts a shopping list of five items from the command line and stores them in a vector and accomplish the following:
   i. To delete an item in the list.
   ii. To add an item at a specified location in the list.
   iii. To add an item at the end of the list.
   iv. To print the contents of the vector.

6. a) Develop an applet that displays a simple message.
   b) Develop an applet that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named "Compute" is clicked.
7. a) Write a Java program for handling mouse events.
   b) Write a Java program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.
   c) Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

8. Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the textfields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException. Display the exception in a message dialog box.

9. a) Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console.
   For ex: The data sent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net).
   b) Write a Java program that allows the user to draw lines, rectangles and ovals.

10. a) Write a java program to create an abstract class named Shape that contains an empty method named numberOfSides ( ). Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method numberOfSides ( ) that shows the number of sides in the given geometrical figures.

a) Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are seperated by commas. Write a java program to display the table using JTable component.

II YEAR – III SEMESTER

GRAPHICS LAB

1. To implement Bresenham's algorithms for line, circle and ellipse drawing
2. To perform 2D Transformations such as translation, rotation, scaling, reflection and sharing.
3. To implement Cohen-Sutherland 2D clipping and window-viewport mapping
4. To perform 3D Transformations such as translation, rotation and scaling.
5. To visualize projections of 3D images.
6. To convert between color models.
7. To implement text compression algorithm
8. To implement image compression algorithm
9. To perform animation using any Animation software
10. To perform basic operations on image using any image editing software

II YEAR – IV SEMESTER

DATABASE MANAGEMENT SYSTEM

Unit I

File systems versus Database systems – Data Models – DBMS Architecture – Data Independence – Data Modeling using Entity – Relationship Model – Enhanced E-R Modeling.

Unit II

Secondary storage Devices – RAID Technology – File operations – Hashing Techniques – Indexing – Single level and Multi-level Indexes – B+ tree – Indexes on Multiple Keys.

Unit III

Relational Model Concepts – Relational Algebra – SQL – Basic Queries – Complex SQL Queries – Views – Constraints – Relational Calculus – Tuple Relational Calculus – Domain Relational Calculus – overview of commercial RDBMSs – Database Design – Functional Dependencies – Normal Forms – 1NF – 2NF-3NF- BCNF – 4NF-5NF – Database Tuning.

Unit IV

Algorithms for Executing Query Operations – using Hermistics in Query operations – Cost Estimation – Semantic Query Optimization – Transaction Processing – Properties of Transactions - Serializability – Transaction support in SQL.

Unit V

Locking Techniques – Time Stamp ordering – Validation Techniques – Granularity of Data Items – Recovery concepts – Shadow paging – Log Based Recovery –Database Security Issues – Access control – Statistical Database Security.

BOOK FOR STUDY:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan- "Database System Concepts", Fourth Edition, McGraw-Hill, 2002.

REFERENCES:

1. Ramez Elmasri and Shamkant B. Navathe, "Fundamental Database Systems", Third Edition, Pearson Education, 2003.
2. Raghu Ramakrishnan, "Database Management System", Tata McGraw- Hill Publishing Company, 2003.
3. Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- "Database System Implementation"- Pearson Education- 2000.
4. Peter Rob and Corlos Coronel- "Database System, Design, Implementation and Management", Thompson Learning Course Technology- Fifth edition, 2003

II YEAR – IV SEMESTER

ADVANCED ENTERPRISE JAVA PROGRAMMING

1. INTEGRATING SERVLETS AND JSP: MVC ARCHITECTURE

Understanding the need for MVC – frameworks, implementing MVC with request dispatcher – defining Beans to represent the data, writing servlets to handle requests, populating Beans, storing the results, forwarding the requests, summarizing the MVC code, interpreting relative URL, three data sharing approaches, forwarding requests from JSP pages

2. JAVA SERVER FACES *(JSF)*

JSP Benefits, Framework roles, Simple JSF application, User Interface Component Model, Navigational Model, Life Cycle of JSF page, Using JSF in JSP Pages – Setting up a page, using core tags, using HTML tags, using localized messages, Using converters, Registering listeners on components, validators, binding component values to external data sources, referencing a backing Bean method, using custom objects, writing component properties, performing localization, creating custom converter, implementing event listener, creating custom validator, writing backing Bean methods

3. ENTERPRISE JAVA BEANS (EJB)

Introduction to Enterprise Beans, Session Bean, Entity Bean, Message driven Bean, defining clients access with interfaces, contents of an enterprise Bean, life cycle of enterprise Bean, creation of Enterprise Bean, application client, web client, other Enterprise Bean features, handling exceptions, mapping table relationships for Bean managed persistence, primary keys for bean managed persistence, container managed persistence – primary key for container managed persistence, Message driven Bean example – applicant client and message driven Bean class

4. QUERY LANGUAGE AND TRANSACTIONS

Terminology, Simplified Syntax, Example Queries, Full Syntax Transactions – Introduction, Container- Managed Transactions, Bean Managed Transactions – JDBC transactions, JTA transactions, Methods not allowed in Bean managed transactions, transaction timeouts, isolation levels, updating multiple databases, transaction in web components, JNDI Naming, Data source objects and connection pools, database connections, mail session connections, URL connections

5. JAVA MESSAGE SERVICE API

Basic JMS API concepts – architecture, messaging domains, consumption, JMS API programming model – administered objects, connections, sessions, message producers, consumers, messages, exception handling, JMS client applications, creating robust JMS applications, Using JMS API in J2EE application

TEXT BOOKS

Unit I Marty Hall, Larry Brown., "Core Servlets and Java Server Pages", 2nd Edition, Pearson Education, 2004. (Ch. 15)

Unit II, III, IV & V Stephanie Bodoff etl., "The J2EETM Tutorial", Pearson Education, 2005.

Unit II Ch 17, 18, 19

Unit III Ch 23, 24, 25, 26, 27, 28

Unit IV&V Ch 29, 30, 31, 33

REFERENCES

James McGovern etl., "Java Web Services Architecture", Elsiver, 2005.

Lame Pekowsky, "Java Server Pages", Pearson Education, 2004.

Paco Gomez and Peter Zadrozny, "Professional Java 2 Enterprise Edition with BAE WebLogic Server", Wrox Press, Feb 2001.

II YEAR – IV SEMESTER
SOFTWARE ENGINEERING

Unit I

Introduction –S/W Engineering Paradigm – life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) - system engineering – computer based system – verification – validation – life cycle process – development process – system engineering hierarchy.

Unit II

Functional and non-functional - user – system –requirement engineering process – feasibility studies – requirements – elicitation – validation and management – software prototyping – prototyping in the software process – rapid prototyping techniques – user interface prototyping -S/W document. Analysis and modeling – data, functional and behavioral models – structured analysis and data dictionary.

Unit III

Design process and concepts – modular design – design heuristic – design model and document. Architectural design – software architecture – data design – architectural design – transform and transaction mapping – user interface design – user interface design principles. Real time systems - Real time software design – system design – real time executives – data acquisition system - monitoring and control system. SCM – Need for SCM – Version control – Introduction to SCM process – Software configuration items.

Unit IV

Taxonomy of software testing – levels – test activities – types of s/w test – black box testing – testing boundary conditions – structural testing – test coverage criteria based on data flow mechanisms – regression testing – testing in the large. S/W testing strategies – strategic approach and issues - unit testing – integration testing – validation testing – system testing and debugging.

Unit V

Measures and measurements – S/W complexity and science measure – size measure – data and logic structure measure – information flow measure. Software cost estimation – function point models – COCOMO model- Delphi method.- Defining a Task Network – Scheduling – Earned Value Analysis – Error Tracking - Software changes – program evolution dynamics – software maintenance – Architectural evolution. Taxonomy of CASE tools.

BOOKS FOR STUDY:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 5th edition, 2001.
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.

REFERENCES :

1. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
2. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.

II YEAR – IV SEMESTER

RESOURCE MANAGEMENT TECHNIQUES

UNIT – I:
Basics of Operations Research (OR): Characteristics of O.R – Necessity of O.R in Industry – OR and Decision making – Role of computers in O.R. Linear programming: Formulations and Graphical solution (of 2 variables) canonical & standard term of Linear Programming problem. Algebraic solution.

UNIT – II:
Algebraic solution: Simplex Method , Charnes method of penalties – two phase simplex method.

UNIT – III:
Transportation model: Definition – formulation and solution of transportation models – the row – minima, column – minima, matrix minima and vogel's approximation method – MODI Method of finding optimum. Assignment model: Definition of Assignment model – comparison with transportation model – formulation and solution of Assignment model – variations of Assignment problem – traveling salesman problem.

UNIT – IV:
Sequencing problem: Processing each of n jobs through m machines – processing n jobs through 2 machines – processing n jobs through 3 machines – processing 2 jobs through m machines – processing n jobs through m machines.

UNIT – V:
Garne Theory: Graphical method of solution of solving 2 x 2 games.
Pert – CPM: Networks – Fulkerson's Rule – measure of activity – PERT computation – CPM computation

Books for Study:

1. **Resource management techniques by Sundarasen , Ganapathy Subramanian & K.Ganesan.**
2. **Operational Research by P.R.Vittal**

Treatment as in **"Resource management techniques by Sundarasen , Ganapathy Subramanian & K.Ganesan"**

Unit I : chapters 1,2
Unit II : chapters 3
Unit III : chapters 7,8
Unit IV : chapters 14
Unit V : chapters 15,16

II YEAR – IV SEMESTER

DBMS LAB

Experiments are to be carried out in ORACLE / MySQL with the required front end software

1. **Study of SQL:** Primitive Data Types – User Defined data Types – Built-in Functions – Parts of Speech of create, alter, drop, select, insert, delete, update, commit, rollback.

2. **Study of Query Types:** Queries involving Union, Intersection, Difference, Cartesian product, Divide Operations – Sub Queries – Join Queries – Nested Queries – Correlated Queries – Recursive Queries.

3. **Study of PL/SQL:** Blocks, Exception Handling, Functions, Procedures, Cursors, Triggers, Packages.

4. **Application:** Design and develop any two of the following:
    - Library Information System
    - Students' Information System
    - Hotel Management System
    - Inventory Control
    - Employee Information System
    - Payroll System
    - Any other Similar System

II YEAR – IV SEMESTER

ADVANCED ENTERPRISE JAVA PROGRAMMING LAB

1. MVC ARCHITECTURE

Implementing MVC with Request Dispatcher
Data Sharing
Interpreting Relative URL‘s in the Destination Page

2. JAVA SERVER FACES *(*JSF)

Simple JSP Application
JSF in JSP Pages
Developing With JSF Technology

3. ENTERPRISE JAVA BEANS (EJB)

Creating Enterprise Bean
Creating Application Client
Creating Web Client
Using Session Bean
Bean Managed Persistence
Container Managed Persistence

4. QUERY LANGUAGE AND TRANSACTIONS

Using Queries
Understanding EJB QL Restrictions
Container Managed Transactions
Bean Managed Transactions
Understanding Resource Connections

5. JAVA MESSAGE SERVICE API

Creating Simple JMS Client Applications
Creating Robust JMS Applications
Using JMS API in J2EE Application

III YEAR – V SEMESTER

COMPUTER NETWORKS

Unit 1:

History and Need for Networking - Service Description – Connectionless and Connection-Oriented Services – Circuit and Packet Switching – Access Networks and Physical Media – Wireless Links and Characteristics – OSI Reference Model - Service Models –Ad-hoc network, GPS, Sensor network.

Unit 2:

Principles of Network Applications – The Web and HTTP – FTP – Electronic Mail – SMTP – Mail Message Formats and MIME – DNS – Socket Programming with TCP and UDP. Multimedia Networking: Internet Telephony – RTP – RTCP – RTSP. Network Security: Principles of Cryptography – Firewalls – Application Gateway – Attacks and Counter measures.

Unit 3:

Transport Layer Services – Multiplexing and Demultiplexing – UDP – Reliable Data Transfer – Go-Back-N and Selective Repeat. Connection-Oriented Transport: TCP – Segment Structure – RTT estimation – Flow Control – Connection Management – Congestion Control – TCP Delay Modeling – SSL and TLS. Integrated and Differentiated Services: Intserv – Diffserv.

Unit 4:

Forwarding and Routing – Network Service Models – Virtual Circuit and Datagram Networks – Router – Internet Protocol (IP) – IPv4 and IPv6 – ICMP – Link State Routing – Distance Vector Routing – Mobile IP

Unit 5:

Layer Services – Error Detection and Correction Techniques – Multiple Access Protocols – Link Layer Addressing – ARP – DHCP – Ethernet – Hubs, Bridges, and Switches –PPP. Ring Topology - Physical Ring – Logical Ring.

BOOKS FOR STUDY:

1. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 3rd edition, 2006.

REFERENCES:

1. Andrew S. Tanenbaum, “Computer Networks”, Prentice-Hall of India, 4th edition, 2003.
2. Larry L. Peterson and Bruce S. Davie, “Computer Networks: A Systems Approach”, Elsevier, 4th edition, 2007.

III YEAR – V SEMESTER

WEB TECHNOLOGY

Unit I

History of the Internet and World Wide Web – HTML 4 protocols – HTTP, SMTP, POP3, MIME, IMAP. Introduction to JAVA Scripts – Object Based Scripting for the web. Structures – Functions – Arrays – Objects.

Unit II

Introduction – Object refers, Collectors all and Children. Dynamic style, Dynamic position, frames, navigator, Event Model – On check – On load – Onenor – Mouse rel – Form process – Event Bubblers – Filters – Transport with the Filter – Creating Images – Adding shadows – Creating Gradients – Creating Motion with Blur – Data Binding – Simple Data Binding – Moving with a record set – Sorting table data – Binding of an Image and table.

Unit III

Audio and video speech synthesis and recognition - Electronic Commerce – E- Business Model – E- Marketing – Online Payments and Security – Web Servers – HTTP request types – System Architecture – Client Side Scripting and Server side Scripting – Accessing Web servers – IIS – Apache web server.

Unit IV

Database, Relational Database model – Overview, SQL – ASP – Working of ASP – Objects – File System Objects – Session tracking and cookies – ADO – Access a Database from ASP – Server side Active-X Components – Web Resources – XML – Structure in Data – Name spaces – DTD – Vocabularies – DOM methods.

Unit V

Introduction – Servlet Overview Architecture – Handling HTTP Request – Get and post request – redirecting request – multi-tier applications – JSP – Overview – Objects – scripting – Standard Actions – Directives.

BOOK FOR STUDY:

1. Deitel & Deitel, Goldberg, “Internet and world wide web – How to Program”, Pearson Education Asia, 2001.

REFERENCES :

1. Eric Ladd, Jim O" Donnel, “Using HTML 4, XML and JAVA”, Prentice Hall of India – QUE, 1999.
2. Aferganatel, “Web Programming: Desktop Management”, PHI, 2004.
3. Rajkamal, “Web Technology”, Tata McGraw-Hill, 2001.

III YEAR – V SEMESTER

NETWORKS LAB

List of exercises

1. Familiarization with configuring and installing a LAN
2. Experimenting with network protocols for achieving communication between computers
3. Interconnection software for communication between two different network architectures
4. Experiments using TCP/IP, POP, e-mail, HTTP
5. Implementation of a web server and web client
6. Design of a mini search engine and firewall
7. Internet/web browser implementation
8. Web programming using HTML/XML/Perl/Java/PHP
9. Network security: email security / web security

III YEAR – V SEMESTER

WEB TECHNOLOGY LAB

1. Create a HTML table with rows and columns and split them using Rowspan and Colspan.
2. Create a web page in the format of front page of a news paper using Text links. Align the text with colors.
3. Write an XML document to display your bio-data. Write an XSL style sheet and attach that to the XML document. Validate the document using DTD or XSD.
4. Write an ASP program to prepare Employee pay bill using Java Script.
5. Write an ASP program to prepare student performance evaluation document using Java Script.

III YEAR – VI SEMESTER

OPEN SOURCE TECHNOLOGIES

LAMP [Linux, Apache, MySql, PHP]

Unit I

Introduction: Open Source – Open Source vs. Commercial Software – What is Linux? - Free Software – Where I can use Linux? Linux Kernel – Linux Distributions

Unit II

Introduction: Linux Essential Commands – Files System Concept – Standard Files – The Linux Security Model – Vi Editor – Patitions creation – Shell Introduction – String Processing – Investigating and Managing Processes – Network Clients – Installing Application

Unit III

Introduction **–** Apache Explained – Starting, Stopping, and Restarting Apache – Modifying the Default Configuration – Securing Apache – Set User and Group – Consider Allowing Access to Local Documentation – Don't Allow public_html Web sites – Apache control with .htaccess

Unit IV

Introduction to MY SQL **–** The Show Databases and Table – The USE command – Create Database and Tables – Describe Table – Select, Insert, Update, and Delete statement – Some Administrative detail – Table Joins – Loading and Dumping a Database.

Unit V

PHP Introduction- General Syntactic Characteristics – PHP Scripting – Commenting your code – Primitives, Operations and Expressions – PHP Variables – Operations and Expressions Control Statement – Array – Functions – Basic Form Processing – File and Folder Access – Cookies – Sessions – Database Access with PHP – MySQL – MySQL Functions – Inserting Records – Selecting Records – Deleting Records – Update Records.

REFERENCES:

James Lee and Brent Ware, “Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP”.

III YEAR – VI SEMESTER

.NET PROGRAMMING

Unit I: VB.NET FUNDAMENTALS: Introduction to .NET Framework - Controls – Menus and Dialog Boxes – Variables and Operators – Decision Structures – Loops and Timers - Debugging - Trapping and Handling Errors

Unit II: VB.NET PROGRAMMING: Modules and Procedures – Arrays and Collections – Exploring Text Files and String Processing – Automating Microsoft Office Applications – Deployment of VB.NET Applications.

Unit III: Class and objects: Types, Structures and Enumerations – Classes – Interfaces – Exceptions: Handling and Classes

Unit IV: Advanced Design Concepts: Patters, Roles and Relationships – Advanced Interface Patterns: Adapters, Delegates and Events – Data Processing and I/O.

Unit V: VB.NET UI DESIGN AND DATABASE APPLICATIONS: Windows Forms – Graphics and Animation - Inheriting Forms and Creating Base Classes – Working with Printers – ADO.NET – Data Grid Control

REFERENCES:

1. Visual Basic.NET, Michael Halvorson, Prentice Hall of India, New Delhi, 2002. [For Units I, II and V]
2. Visual Basic .Net – The Complete Reference, Jeffrey R. Shapiro, Osborne, 2002.

III YEAR – VI SEMESTER
CRYPTOGRAPHY AND NETWORK SECURITY

Unit I

Overview – Symmetric Ciphers: Classical Encryption Techniques

Unit II

Symmetric Ciphers: Block ciphers and Data Encryption Standards. Public-key encryption and Hash Functions: Public-Key Cryptography and RSA

Unit III

Network Security Practices: Authentication applications – Electronic Mail Security

Unit IV

Network Security Practices: IP Security – Web security

Unit V

System Security: Intruders – Malicious Software – Firewalls

BOOK FOR STUDY

1. William Stallings, "Cryptography and Network Security – Principles and Practices', Prentice-Hall, Third edition, 2003

REFERENCES:

1. Johannes A, Buchanan, "Introduction to cryptography", Springer-Verlag
2. Atul kahate, "Cryptography and Network Security". TMH

III YEAR – VI SEMESTER

.Net Lab

1. Develop a Math Calculator.
2. Create an Application using the Form Controls.
3. Create an application using the form controls and perform all validation operations.
4. Develop a program which makes use of String and String Builder class.
5. Create a Text Pad Application.
6. Develop a VB.NET application using menu.
7. Create an application using Common Dialog Controls.
8. Create a database driven application to manage employee database.

Other than these, possible lab exercises related to syllabus can also be included.

III YEAR – VI SEMESTER

OPEN SOURCE LAB

1. Mark List Preparation
2. Menu Creation
3. Login Greeting Script
4. Copying Files
5. Searching a Word in a File
6. Compression Techniques
7. Paragraphs Formatting
8. User Creation
9. Group Creation
10. Cron Scheduling

Elective I :

OBJECT ORIENTED ANALYSIS AND DESIGN

Unit I

An Overview of Object Oriented Systems Development - Object Basics – Object Oriented Systems Development Life Cycle.

Unit II

Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Patterns – Frameworks – Unified Approach – Unified Modeling Language – Use case - class diagram - Interactive Diagram - Package Diagram - Collaboration Diagram - State Diagram - Activity Diagram.

Unit III

Identifying use cases - Object Analysis - Classification – Identifying Object relationships - Attributes and Methods.

Unit IV

Design axioms - Designing Classes – Access Layer - Object Storage - Object Interoperability.

Unit V

Designing Interface Objects – Software Quality Assurance – System Usability - Measuring User Satisfaction

BOOKS FOR STUDY:

1. Ali Bahrami, “Object Oriented Systems Development”, Tata McGraw-Hill, 1999
2. Martin Fowler, “UML Distilled”, Second Edition, PHI/Pearson Education, 2002.

REFERENCES :

1. Stephen R. Schach, “Introduction to Object Oriented Analysis and Design”, Tata McGraw-Hill, 2003.
2. James Rumbaugh, Ivar Jacobson, Grady Booch “The Unified Modeling Language Reference Manual”, Addison Wesley, 1999.
3. Hans-Erik Eriksson, Magnus Penker, Brain Lyons, David Fado, “UML Toolkit”, OMG Press Wiley Publishing Inc., 2004.

Elective I :

SOFTWARE TESTING

Unit I- TESTING BASICS

Testing as an engineering activity – Role of Process in software quality – Testing as a process – Basic definitions – Software testing principles – The tester's role in a software development organization – Origins of defects – Defect classes – The defect repository and test design – Defect examples – Developer / tester support for developing a defect repository.

Unit II- TEST CASE DESIGN

Introduction to testing design strategies – The smarter tester – Test case design strategies – Using black box approach to test case design – Random testing – Equivalence class partitioning – Boundary value analysis – Other black box test design approaches – Black box Testing and COTS – Using white box approach to test design – Test adequacy criteria – Coverage and control flow graphs – Covering code logic – Paths – Their role in white box based test design – Additional white box test design approaches – Evaluating test adequacy criteria.

Unit III- LEVELS OF TESTING

The need for levels of testing – Unit test – Unit test planning – Designing the unit tests – The class as a testable unit – The test harness – Running the unit tests and recording results – Integration tests – Designing integration tests – Integration test planning – System test – The different types – Regression testing – Alpha, beta and acceptance tests.

Unit IV- FUNDAMENTALS OF SOFTWARE QUALITY & QUALITY ASSURANCE

Software quality - Hierarchical models of Boehm and McCall - Quality measurement - Metrics measurement and analysis - Gilb's approach - GQM Model-Quality tasks - SQA plan - Characteristics - Implementation - Documentation - Reviews and audits.

Unit V- QUALITY CONTROL AND RELIABILITY

Defect prevention and removal - Reliability models - Rayleigh model - Reliability growth models for quality assessment.

CASE STUDY: Tools for quality - Ishikawa's basic tools - CASE tools

TEXT BOOKS

1. Ilene Burnstein, "Practical Software Testing", Springer International Edition, 2003. Edward Kit, "Software Testing in the Real World – Improving the Process", Pearson Education, 1995.
2. Allan C. Gillies, "Software Quality: Theory and Management", Thomson Learning, 2003.
3. Stephen H. Kan, "Metrics and Models in Software Quality Engineering", Pearson Education (Singapore) Pvt. Ltd., 2002.

REFERENCES:

1. Elfriede Dustin, "Effective Software Testing", Pearson Education, 2003. Renu Rajani and Pradeep Oak, "Software Testing – Effective Methods, Tools and Techniques", Tata McGraw Hill, 2003.
2. Mordechai Ben, Menachem and Garry S.Marliss, "Software Quality", Thomson Asia Pvt. Ltd., 2003.
3. Kamna Malik and Praveen Choudry, "Software Quality : A Practitioner Approach", PHI, 2000.

Elective I:

SOFT COMPUTING

Unit I: BASICS OF NEUROSCIENCE AND ANN MODELS

The Brain as a Neural network-Basic Properties of Neurons - Neuron Models - Rosenblatt's Prceptron - The widrow-Hoff LMS Learning Algorithm-Order of a Predicate and a Perceptron - Complexity of Learning using Feed forward Networks.

Unit II: FUZZY SYSTEMS

Fuzzy Sets and Fuzzy Reasoning - Fuzzy Matrices - Fuzzy Functions - Decompositions - Fuzzy Automata and Languages - Fuzzy Control Method - Fuzzy Decision Making.

Unit III : NEURO-FUZZY SYSTEMS

Introduction to Neuro - Fuzzy Systems -Fuzzy System Design Procedures - Fuzzy Sets and Logic Background - Fuzzy / ANN Design and Implementation.

Unit IV: GENETIC ALGORITHMS

Introduction - Robustness of Traditional Optimization and Search Techniques - The goals of optimization-Computer Implementation-Data Structures, Reproduction, Crossover and Mutation - Mapping Objective Functions to fitness form - Some Applications of Genetic Algorithms.

Unit V: ARTIFICIAL INTELLIGENCE

AI technique-Level of the Model - Problems, Problem Spaces and Search - Issues in the Design of Search Programs - Heuristic Search Techniques - Knowledge Representations and Mappings

BOOKS FOR STUDY

1. N. K. Bose and P. Liang , "*Neural Network Fundamentals*"
2. Timothy J. Ross , "*Fuzzy Logic with Engineering Applications*", McGraw- Hill International Editions, 1995

REFERENCE BOOKS

1. Elaine Rich and Kelvin knight ,"*Artificial Intelligence*", McGraw- Hill 2000
2. David E. Goldberg, "*Genetic Algorithms-In Search, optimization and Machine Learning*", Pearson Education
3. Robert J. Schalkoff, "*Artificial Neural Networks*", McGraw-Hill International Editions, 1997
4. Freeman J.A. & D.M. Skapura , "*Neural Networks: Algorithms, Applications and Programming Techniques*", Addison Wesley, 1992
5. G.J. Klir & B. Yuan, "*Fuzzy Sets & Fuzzy Logic*", PHI, 1995

Elective II

SOFTWARE METRICS

Unit I: Introduction – What to Measure – Measurement Fundamentals – Measuring Size – Measuring Complexity.

Unit II: Estimating Effort: Effort Estimation – Software Estimation Methodologies & Models – Combining Estimates – Estimating Issues – Estimating Early and Often

Unit III: Defects & Defect Metrics: Defect Dynamics and Behaviors – Defect Projection Techniques and Models – **Software Reliability Measurement and Prediction:** Reliability – Faults and Failures – Failure Severity Classes – Failure Intensity – Reliability Models.

Unit IV: Response Time and Availability – **Measuring Progress:** Project Milestones – Code Integration – Testing Progress – Defects Discovery and Closure – Process Effectiveness.

Unit V: Financial Measures for the Software Engineer – Benchmarking – Presenting Metrics Effectively to Management.

BOOK FOR STUDY:

1. Software Measurement and Estimation – A Practical Approach, Linda M. Laird & M. Carol Brennan, IEEE CS & Wiley Inter science Publication.

REFERENCE:

1. ROI of Software Process Improvement: Metrics for Project Managers and Software Engineers, David F. Rico, J.Ross Publishing – 2004

Elective II

E-COMMERCE

Unit I: INTRODUCTION

History of E- Commerce - Overview of E- Commerce framework - E- Business models - Network infrastructure - Role of Internet - E- commerce and World wide Web.

Unit II: E-COMMERCE

Consumer oriented E- Commerce applications - Mercantile process models ; Electronic Payment Systems - Digital Token based EPS - Smart cards - Credit cards - Risks - designing EPS.

Unit III: ORGANIZATIONAL COMMERCE AND EDI

Electronic Data Interchange - EDI applications in Business - EDI and e Commerce - EDI standardization and implementation - Internet based EDI.

Unit IV: SECURITY

Internet security standards - secure electronic payment protocols ; cryptography and authentication - security issues - encryption techniques; e commerce payment mechanisms -SET protocol - electronic check - electronic cash; E-commerce ethics, regulations and social responsibility.

Unit V: INTELLIGENT AGENTS

Definition and capabilities - limitation of agents - security - web based marketing - search engines and Directory registration - online advertisements - Portables and info mechanics - website design issues.

BOOKS FOR STUDY

1. Ravi Kalakota and Andrew B Whinston, "*Frontiers of Electronic Commerce*", Pearson Education Asia, 1999.(Chapters 1,2,3,6-10,16)
2. Marilyn Greenstein and Todd M Feinman , "*Electronic commerce: Security, Risk Management and Control*" Tata McGraw-Hill, 2000.(Chapters 7,8,10-12)

REFERENCE BOOKS

1. Judy Strauss and Raymond Frost , "*E Marketing*", PHI, 2002
2. Brenda Kienan , "*Managing e Commerce Business*" , PHI,2001
3. Vivek Sharma and Rajiv Sharma , "*Developing e Commerce Sites - an integrated approach*" , Pearson Education Asia, 2000

ONLINE REFERENCES

1. http://www.techtutorials.info/ecommerce.html (Unit-1,2)
2. http://en.wikipedia.org/wiki/Electronic_data_interchange (Unit-3)
3. http://cs.anu.edu.au/student/comp3410/lectures/security/symmetric-4up.pdf (Unit-4)
4. http://www.cs.berkeley.edu/~russell/aimale/chapter02.pdf (unit-5)

Elective II:

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

UNIT I

Introduction – Evaluation of Artificial Intelligence production Systems – search strategies. Hill climbing – back tracking graph search(Algorithm A and A") properties of A^* algorithm. Monotone restriction specialized production systems- AO^* algorithm.

UNIT – II

Searching game trees : Minimax Procedure alphabeta pruning – Introduction to predicate calculus. Answer extraction – Introduction to knowledge based systems – knowledge processing techniques – Knowledge inference techniques.

UNIT – III

Expert System definition- various stages in developing expert system- knowledge Representation using semantic ness, predicate calculus, frames, scripts-knowledge acquisition techniques – factors to be considered while expert systems.

UNIT – IV

Forward chining, backward chining- tools for developing an experts system- explanation facilities- meta knowledge-fuzzy reasoning.

UNIT – V

Building various expert systems – case study denral, mycin etc. Introduction to various applications of AI. Natural language processing- natural language understanding – perception – learning using neural nets.

Text Books

1. Elaine Rich, Artificial Intelligence, MC Graw Hill International.
2. PH. Winston, Artificial Intelligence, Addison Wessley.
3. Fredrick Hayes Roth, Donald A Waterman and Douglas B. Leant, Building Expert System, Addison Wessley,1983.

Reference Books

1. N. J. Nilson, Spring Verlag, Principles of AI.1983.
2. David W. Rolston, Principles of AI & Expert Systems Development, MC Graw Hill.
3. Donald A Waterman, A guide to expert ystems.

Non major Electives:

ACCOUNTING AND FINANCIAL MANAGEMENT

Unit 1 Introduction

Meaning and Scope of Accounting, Basic Accounting Concepts and Conventions – Objectives of Accounting – Double Entry book keeping, Journal – Ledger – Trial Balance – Cash Book

Unit 2 Final Accounts

Preparation of Final Accounts of a Sole trading concern – Adjustments – Closing Stock, Discount on Debtors, Provision for Bad debts, outstanding expenses, prepaid expenses, Accrued Income

Unit 3 Management Accounting

Management Accounting – Meaning , Scope, Importance and limitations – Analysis and Interpretation of financial statements – Comparative Statements, Common Size Statement and Trend Analysis.

Unit 4 Ratio Analysis and Budgets

Ratio Analysis – Classification of Ratios – Liquidity, Profitability, turnover, capital structure and leverage – Budgets and Budgetory control – Types of Budgets – Production, Cash and Flexible Budgets.

Unit 5 Marginal Costing and Break Even Analysis

Marginal Costing – CVP Analysis – Break even Analysis – Break even Chart.

Books for Study and Reference

1. Dr. Maheswari S.N, Management Accounting – Sultan Chand and Co.
2. Jain and Narang – Financial Accounting – Kalyani Publications
3. 1.Shukla M.C. and Grewal T.S. – Advanced Accounts – S. Chand and Co. – New Delhi 1991.
4. 2.Kuchhal S.C. – Financial Management – Chaitanya – Allahabad – 1980
5. 3. Hingorani N.L. and Ramanathan A.R. – Management accounting – Sultan chand – New Delhi – 1982.
6. 4.Ramachandran T – Accounting and Financial Management – Scitech and Co. Chennai 2001.

Question Paper Pattern

Part – A (10 * 2 = 20 Marks)
(2 Question from each unit) Theory
Part – B (5 * 16 = 80 Marks)
(1 Set from each Unit (Either or Pattern)) Problems

Non major Electives:

ORGANIZATIONAL BEHAVIOR

UNIT I

Need and scope of Organizational behavior – Theories of organization –Individual difference Vs Group intelligence tests – Measurement of intelligence –Personality Tests – Nature – Types and uses of perception.

UNIT II

Motivation – Financial and non – Financial motivational techniques – Job satisfaction – meaning – Factors – Theories – Measurement – Morale – Importance –Employee attitudes and behavior and their significance to employee productivity.

UNIT III

Work environment – Good house keeping practices – Design of work place –Fatigue – Causes and prevention and their importance – Leadership – Types and theories of leadership.

UNIT IV

Group dynamics – Cohesiveness – Co-operation – Competition – Conflict – Resolution – Sociometry – Group norms – Role, position, status.

UNIT V

Organizational culture and climate – Organizational effectiveness –Organizational Development Counseling and guidance – Importance of counselor –Types of counseling – Information needed for counseling

TEXT BOOKS

1. L.M. Prasad – Organisational Behaviour

REFERENCE BOOKS:

1. Arnold – Work Psychology
2. Blum M.L. Industrial Psychology and its social foundation
3. Hippo Organize Tonal Behavior
4. Hersey Biancha d – Introduction to Organizational Behavior

Non major Electives:

BIO INFORMATICS

Unit I: Molecular Biology, Gene Structure and Information Content, Molecular Biology Tools, Genomic Information Content, Data Searches and Pairwise Alignments, Gaps, Scoring Matrices, Needleman and Wunsch Algorithm, Global and Local Alignments, Database Searches.

Unit II: Patterns Of Substitution Within Genes, Estimating Substitution Numbers, Molecular Clocks, Molecular Phylogenetics, Phylogenetic Trees, Distance Matrix Methods.

Unit III: Character-Based Methods Of Phylogenetics, Parsimony, Ancestral Sequences, Searches, Consensus Trees, Tree Confidence, Genomics, Prokaryotic Gene Structure, Gene Density, Eukariotic Genomes, Gene Expression.

Unit IV: Protein and Rna Structure Prediction, Polypeptic Composition, Secondary and Tertiary Structure, Algorithms For Modeling Protein Folding, Structure Prediction

Unit V: Proteomics, Protein Classification, Experimental Techniques, Ligand Screening, Post-Translational Modification Prediction.

REFERENCES:

1. D. E. Krane and M. L. Raymer, Fundamental Concepts of Bioinformatics, Pearson Education, 2003.
2. T. K. Attwood and D. J. Parry-Smith, Introduction to Bioinformatics, Pearson Education, 2003.
3. J. H. Zar, Biostatistical Analysis, 4/e, Pearson Education, 1999.

I YEAR - I SEMESTER
COMMUNICATION SKILLS
(Internal Assessment Only)

UNIT I - BASIC ENGLISH

Introduction to English Language- Alphabets: Types, Explanations, Examples, Exercise- Introduction to Phonetics- Application of Phonetics- Silent Consonants, Rules to identify the silent consonants in a want- Conversion of mother tongue to English language- Direct translation of words and essential phrases to English language- Short conversations.

UNIT - II GRAMMAR AND USAGE OF GRAMMAR

Introduction to Grammar – Sentences: Types, Examples, And Exercise- Nouns: Noun Gender, Types, Examples, And Exercise – Pronouns: Types, Examples, And Exercise – Verb: Types, Examples, And Exercise – Adjectives: Types, Examples, And Exercise – Adverb: Types, Examples, Exercise – Preposition – Conjunction – Interjection – Articles.

UNIT III - TENSES

Introduction to tenses – Types of tenses – Framing sentences using tenses – Application of tenses – Active voice and passive voice – Direct speech and indirect speech – Idioms and Phrases – Frequently used Phrasal Verbs.

UNIT IV - ADVANCED ENGLISH

Greetings – Requests – Demands – Instructions – Enquiries – Behavior Norms – Listening – Telephone Etiquette – Giving Information – Situational Conversations – Basics of Accent: American and Neutral{British}.

UNIT V - WRITTEN COMMUNICATION

Sending Messages – General formats of writing a letter – Telegraphic Messages – Writing for occasions – Types of letters: Personal, Business, Proposal, Applications, Thanks, Invitation, Condolence, Requisition, and Complaint.

TEXT BOOKS

John Seely, "Oxford A-Z of Grammar and Punctuation", Oxford University Press, YMCA library building, 3rd edition, NewDelhi 110001, 2007.

Jeremy Butterfield, "Oxford A-Z of English usage", Oxford University Press, YMCA library building, 3rd edition, NewDelhi 110001, 2007.

Dr.V.H.Baskaran, "English Made Easy", Shakespear Publication, 6th edition, Chennai 2007.

Dr.V.H.Baskaran, "Spoken English Made Easy", Shakespeare Publication, 6th edition, Chennai 2007.

Dr.J.John Love Joy, Dr.Francis M.Peter S.J, "Lets Communicate – Basic English for everyone", Vaigarai publications, 1st edition, Dindigul 2007.

WREN & Martin's " High School English Grammar and Composition", Revised by N.D.V Prasad Rao, , S.Chand & company Ltd., 10th edition, New Delhi 2010.

Penny Ur, "Grammar Practice Activities", Cambridge University Press, 4th edition, 2006.

Kenna Bourke, "Test It, Fix It – Intermediate English Grammar", Oxford UK, 10th edition, 2008.

I YEAR - II SEMESTER
VALUE EDUCATION
(Internal Assessment Only)

PURPOSE

To provide guiding principles and tools for the development of the whole person, recognizing that the individual is comprised of Physical Intellectual, Emotional and Spiritual dimensions.

INSTRUCTIONAL OBJECTIVES

- To help individuals think about and reflect on different values
- To deepen understanding, motivation and responsibility with regard to making personal and social choices and the practical implications of expressing them in relation to themselves, others, the Community and the world at large
- To inspire individuals to choose their own personal, social, moral and spiritual values and be aware of practical methods for developing and deepening them

Value Education-Introduction - Definition of values - Why values? - Need for Inculcation of values - Object of Value Education - Sources of Values - Types Values:

- Personal values
- Social values
- Professional values
- Moral and spiritual values
- Behavioral (common) values

Personal values - Definition of person - Self confidence - Self discipline - Self Assessment - Self restraint - Self motivation - Determination - Ambition - Contentment - Humility and Simplicity - Sympathy and Compassion - Gratitude -Forgiveness - Honesty - Courtesy.

Social values - Definition of Society - Units of Society - Individual, family, different groups - Community - Social consciousness - Equality and Brotherhood - Dialogue - Tolerance - Sharing - Responsibility - Cooperation Freedom - Repentance and Magnanimity.

Professional values - Definition - Competence - Confidence - Devotion to duty -Efficiency - Accountability - Respect for learning /learned - Willingness to learn-Open and balanced mind - Team spirit - Professional Ethic - Willingness for Discussion - Aims - Effort - Avoidance of Procrastination and slothfulness -Alertness.

Behavioral values - Individual values and group values - Good manners at home and outside - Equality - Purity of thought, speech and action - Understanding the role of religion - Faith - Understanding the commonness of religions - respect for other faiths - unity in diversity - Living together - Tolerance - Nonviolence - Truthfulness - Common aim - Unified effort towards peace - Patriotism.

REFERENCE BOOKS

- Dr. S. Ignacimuthu S. J., Values for life, *Better yourself Books*, Bandra Mumbai - 600 050 (1999)
- Values(Collection of Essays)., Published by : Sri Ramakrishna Math., Chennai - 4.,(1996)
- Prof. R.P.Dhokalia., Eternal Human Values NCRT - Campus Sri Aurobindo Marg., New Delhi - 110 011
- Swami Vivekananda., Education., Sri Ramakrishna Math., Chennai-4(1957)
- Tirukural (English Translation by Dr.G.U.Pope)
- The Bible
- The Kuran
- The Bagavath Geetha

SEMESTER - III
ENVIRONMENTAL SCIENCE
(Internal Assessment Only)

Unit 1: The multidisciplinary nature of environmental studies

Definition, scope and importance

Need for public awareness

Unit 2: Natural Resources:

Renewable and non-renewable resources:

Natural resources and associated problems.

(a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

(b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

(d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

(f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Unit 3: Ecosystems

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem:

a. Forest ecosystem

b. Grassland ecosystem

c. Desert ecosystem

d. Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Unit 4: Biodiversity and its conservation

- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographically classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Unit 5: Environmental Pollution

Definition

- Causes, effects and control measures of:

  a. Air pollution
  b. Water pollution
  c. Soil pollution
  d. Marine pollution
  e. Noise pollution
  f. Thermal pollution
  g. Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

Unit 6: Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns.
- Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act
- Air (Prevention and Control of Pollution) Act
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

Unit 7: Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

Unit 8: Field Work

Visit to a local area to document environmental assetsriver/forest/ grassland/hill/mountain
Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
Study of common plants, insects, birds
Study of simple ecosystems-pond, river, hill slopes, etc

SEMESTER - IV
SOFT SKILLS
(Internal Assessment Only)

Unit I

Behavioral Skills

Unit II

Business Communication

Unit III

Spoken English

Unit IV

Text Writing

Unit V

Group Dynamics

TEXT AND REFERENCE BOOKS

G. Ravindran, S.P. Benjamin Elango and L. Arockiam, "Success through Soft Skills", ICT, 2007.

SEMESTER - V

HUMAN RIGHTS EDUCATION

(Internal Assessment Only)

Unit I- Universal Declaration of Human Rights: Preamble -The General Assembly-Article 1-30. The Preamble of the Constitution of India: Preamble- Objective and Scope of the Preamble-We, the People of India-Nature of India-Sovereign-Division of Powers-Socialist-Secular-Democracy-Democratic-Republic-Social Justice-Economic Justice-Political Justice-Liberty-fraternity-Equality-Law-Constituent Assembly-Amendment of the Constitution.

Unit II - Fundamental Rights: Equality before Law-Abolition of Untouchability-Abolition of titles-Right to Freedom-Protection from Illegal conviction-Protection of Life and Personal Liberty-Right to Primary Education-Protection against Illegal Arrest and Detention-Right Against Exploitation-Right to Freedom of Religion-Cultural and Educational Right of minorities-Right to Constitutional Remedies.
Right to Equality: Fundamental right to Equality-Classification-No Discrimination on Ground of religion, race, caste, Gender etc-Right to enter places of public resort-Special Provision for Women and Children-Backward Class Commission-Equality of Opportunity in public Employment-Reservation for Backward Class in services-Carry forward Rule Valid –Mandal Commission Judgment-Abolition of Untouchability-Abolition of Titles.
Unit III - Right to Freedom: Fundamental Right to Freedom-Freedom of speech and expression-Meaning and Scope-Freedom of Press-Right to Privacy-Grounds of Restriction-Security of the state-Friendly Relation with Foreign States-Public order-Contempt of Court-Defamation-Incitement to an Offence-Sedition-Freedom of Assembly-Unlawful Assembly-Freedom of Movement-Restrictions-Freedom of Residence-Freedom of Profession, Occupation, Trade or business.
Right to Life and personal liberty: Most Important Fundamental Right-Right to Life-Right to Livelihood-Directive Principal of State Policy-Means of Livelihood-Right to Privacy-Right to health and Medical care-Professional Obligation of Doctors-No Right to Die-Prisoners Rights-right against Inhuman Treatment-Right of a condemned prisoner for procedural fairness-right to Maintenance and Improvement of Public Health-Personal Liberty-Stress on Procedural Safeguards-Right against Illegal Arrest-Right against Arbitrary Arrest and detention-Emergency and Article 21-Right to Claim Compensation for Violation of Article 21-Right to Primary education(Article 21A)-Insertion of Article A in the constitution

Unit IV - Freedom of Religion: Secular State-Freedom of Religion-Religion-Freedom of conscience-freedom of Profess religion-freedom to Practice Religion-freedom to Propagate Religion-Right to Convert-Protection guaranteed-Essential Part of Religion-Restrictions on freedom of Religion-Regulation of Economic, Financial, Political and Secular activities associates with religious practices-Social welfare and Social reform-Power of the State to Throw Open all religious Institutions to all Hindus-Carrying of Kirpan-Freedom to Manage Religious Affairs [Article 26]-Right to Establish and Maintain Institutions for Religious and Charitable Purpose-Right to Manage "Matters of religion".

How do you enforce your fundamental right: Right to Constitution remedies-Opinion of Dr.Ammbedkar-Power of the Supreme Court-Natural of Article 32- Power of the high Court's- Write of 'Habeas Corpus'- Effective Means-Detention in private custody-Write by Public Spirited person-Sending Post Card to the Supreme court-Suspension of Article 21- Normal rule- write of "Mandamus"-Purpose of the write-Determination of Issues-Examples of cases where write of mandamus can be filed against Government Authorities.-PIL Cases(public Interest Litigation)- write of Prohibition-Write of certiorari-Write of "Quo Warrantor"-Power to Award Compensation under Article 32 and 26.

Unit V - The Law to protect our Human Rights: Title of the Law-Basic and historic background-National Human rights Commission: Constitution of the National Commission-Appointment if Chairperson and Other members-Term of Office of Members-Functions of the Commissions-Power relating to the Inquires-Investigation-Steps after Inquiry-State Human rights Commission: Constitution of the State Human rights Omissions-Human rights Courts: Court of Session to be a human rights Courts-Special Public Prosecutor-Powers of Central Government to make Rules- The Role of activities and NGO's-Format for filing a complaint with the NHRS-Guidelines on how to filing a complaint with the NHRS- Following types of Complaints are not Entertainable.

Reference Book

P.D.Mathew S.J, "Know Your Rights", Nyay Darshan, Centre for HR and Judice.

SEMESTER VI

QUANTITATIVE APTITUDE DEVELOPMENT

(Internal Assessment Only)

Unit I
Averages – Problems on numbers – Problems on Ages – Percentages – Profit and Loss

Unit II
Ratio and Proportion – Partnership – Time and Work – Pipes and Distances – Time and distance

Unit III
Problems on Trains – Boats and Streams – Allegation – Simple Interest – Compound Interest

Unit IV
Calendar – Clocks – Permutation – Combination – Probability

Unit V
Direction sense test – Mathematical Operations – Logic – Problems on cubes – Problems on dice

TEXT AND REFERENCE BOOKS

R.S.Aggarwal, "Quantitative Aptitude for Competitive Examinations", 7th Revised Edition, S.Chand and Co. Ltd, New Delhi, 2005.
R.S.Aggarwal, "Verbal and Non Verbal Reasoning", S.Chand and Co. Ltd, New Delhi.
Barron's Guide for GMAT, Galgotia Publications, New Delhi, 2006.