

THIAGARAJAR COLLEGE (AUTONOMOUS) MADURAI –9
RE-ACCREDITED WITH ‘A’ GRADE BY NAAC
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. COMPUTER SCIENCE

COURSE STRUCTURE (w.e.f 2011-2014 batch onwards)

Code no	Type of Paper	Subject	Contact Hours per week	Total Hours Allotted	Maximum Marks CA	Maximum Marks SE	Total	Credit Points
First semester								
P111	Part-I	Tamil	5	75	25	75	100	3
P221	Part-II	English	3	45				
AS11	Allied-I	Discrete Mathematics	5	75	25	75	100	5
MS11	Core(1)	Digital Principles and Applications	5	75	25	75	100	5
MS12	Core(2)	Programming in C	5	75	25	75	100	5
ESSL11	SE-I	C – Programming Lab	5	75	15	35	50	2
ES	ES	Environmental Studies	2	30	15	35	50	2
			30	450				22
Second Semester								
P121	Part-I	Tamil	5	75	25	75	100	3
P221	Part-II	English	3	45	25	75	100	3
AS21	Allied-II	Statistics	5	75	25	75	100	5
MS21	Core(3)	Object Oriented Programming with C++	4	60	25	75	100	4
MS22	Core(4)	Visual Basic Programming	4	60	25	75	100	4
MSL21	Core(5)	C++ Programming Lab	4	60	40	60	100	2
ESSL21	SE-II	Visual Basic Programming Lab	3	45	15	35	50	2
VE	VE	Value Education	2	30	15	35	50	2
			30	450				25
Third Semester								
AS31	Allied-III	Numerical Methods	5	75	25	75	100	5
MS31	Core(6)	Fundamentals of Data Structure	6	90	25	75	100	5
MS32	Core(7)	Microprocessor and Peripherals	6	90	25	75	100	5
MS33	Core(8)	System Software	6	90	40	60	100	5
ENS31(S)	NME-I	Software Development	2	30	15	35	50	2
ESSL31	SE-III	Data Structure Lab	5	75	15	35	50	2
			30	450				24
Fourth Semester								
AS41	Allied-IV	Optimization Techniques	5	75	25	75	100	5
MS41	Core(9)	RDBMS and Oracle Programming	5	75	25	75	100	5
MS42	Core(10)	Computer Graphics	5	75	25	75	100	5
MSL41	Core(11)	Oracle Programming Lab	4	60	40	60	100	2
EMS41	Elective-I		5	75	25	75	100	5
ENS41(I)	NME-II	Internet Applications	2	30	15	35	50	2
ESSL41	SE-IV	Graphics Programming Lab	4	60	15	35	50	2
			30	450				26

MS51	Core(12)	Fifth Semester Fundamentals of Computer Algorithm	5	75	25	75	100	4
MS52	Core(13)	Web Technology	5	75	25	75	100	4
MS53	Core(14)	Java Programming	5	75	25	75	100	4
EMS51	Elective-II		5	75	25	75	100	5
ESSL51	SE-V	Java Programming Lab	5	75	15	35	50	2
ESSL52	SE-VI	Web Technology Lab	5	75	15	35	50	2
			30	450				21
MS61	Core(15)	Sixth Semester Data Communication & Networking	5	75	25	75	100	4
MS62	Core(16)	Operating System	5	75	25	75	100	4
MS63	Core(17)	Software Engineering	5	75	25	75	100	4
MS64	Core(18)	Data Mining and Warehousing	5	75	25	75	100	4
PJ	Elective III	Project	10	150	25	75	100	5
			30	450				21
	EA	PART - V	0					1
Sem - V	Self-Study Paper	Computer Security						
			30	450				27

List of Electives:

Multimedia Technology

E-Commerce Lab

Artificial Intelligence

Client/Server Computing
Computer Organization

Skill Based Electives:

C Programming Lab

Visual Basic Programming Lab VB•NET

Data Structure Lab
Graphics Programming Lab

Java Programming Lab
Web Technology Lab

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Department of Computer Science

B.Sc. Computer Science

(2011 – 2014 Batch onwards)

Course Structure – Choice Based Credit System

A) Consolidation of Contact Hours and Credits : UG

Semester	Contact Hrs / Week	Credits
i.	30	22
ii.	30	25
iii.	30	24
iv.	30	26
v.	30	21
vi.	30	21
Total	180	140

B) Curriculum Credits : Partwise

Papers	Credits
Part I	6
Part II	3
Part III	
Core	75
Allied	20
Elective	15
Part IV	
NME (2 x 2)	4
SE (6 x 2)	12
VE	2
ES	2
Part V	1
Total	140

Thiagarajar College: Autonomous: Madurai –9
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Department Of Computer Science
(From 2011 – 14 onwards)

Course	: B.Sc. Computer Science	Code No	:MS11
Class	: I Year	No of Hrs allotted	: 5
Semester	: First	Internal: 25	External: 75
Title of the Paper:	Digital Principles and Application	No of credits	: 5
Paper	: Core (1)		

Course Objective

This course deals with the design of digital system. It presents the basic idea about number systems, logic circuits and it provides a number of methods suitable for designing logic and digital circuits for designing modern digital computers.

Unit-I

Logic Circuits

Binary number system –inverters – OR gates – AND gates – Boolean algebra – NOR gates – NAND gates.

Circuit Analysis and Design

Boolean laws and theorem – Sum of products method – Truth table to karnaugh map – Pairs, Quads, and Octets – Karnaugh simplifications – Don't care condition. Products of sums method – simplification.

Unit-II

Data Processing circuits

Multiplexers – Demultiplexers – 1 of 16 decoder – BCD to decimal decoders – seven segment decoders – encoders – exclusive OR gates – parity generators – checkers.

Unit-III

Number systems and codes

Why binary numbers are used? – Binary to decimal conversion – Decimal to binary conversion – octal numbers – hexadecimal numbers – The ASCII code – The Excess-3 code – The gray code.

Arithmetic circuits

Binary addition – binary subtraction – unsigned binary numbers – sign magnitude numbers – 2's complement representation – 2's complement arithmetic – arithmetic building blocks – The Adder – subtracter -binary multiplication and division .

Unit-IV

Flip-Flops

RS Flip-flop – clocked RS flip-flop – D flip-flop – Edge – Triggered D flip-flop – flip flop switching time – JK flip-flop – JK master-slave flip-flop – schmitt trigger.

Clocks and Timers

Clock waveforms – TTL clock – 555 Timer – astable – monostable .

Unit-V

Shift Registers

Types of register – Serial-in – Serial-out – Serial-in – Parallel-out – Parallel-in- Serial-out – Parallel-in -Parallel-out – Ring counter.

Counters

Asynchronous counters – decoding gates – synchronous counter –MOD3 counter – A MOD5 counter – shift counters.

Text Book

Title : Digital Principles and application
Author : Albert Paul Malvino, Donald P. Leach
Publisher : Tata McGraw Hill Edition
Edition : fourth edition
Year : reprint 2000

Chapters:

Unit – I : 1 , 2.1 to 2.8
Unit – II : 3.1 to 3.8
Unit – III : 4.1 to 4.8, 5
Unit – IV : 8,9.1 to 9.4
Unit – V : 10,11.1 to 11.5,11.7

Reference:

Title : Digital Logic and computer design
Author : M.Morris Mano
Publisher : Prentice – Hall of India.
Edition :
Year : reprint 2004

Title : Digital System Principles and Application
Author : Ronald J. Tocci
Publisher : Prentice – Hall of India.
Edition :
Year : 2007

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Course	: B.Sc. Computer Science	Code	: MS12
Semester	: First	No. of Hrs allotted	: 5
Class	: I	Internal: 25 External: 75	
Paper	: Core (2)	No. of Credits	: 5
Title of the Paper	: Programming in C		

Course Objectives

This course introduces programming concepts and helps students to develop programming skill in ‘C’ Language.

Unit-I

Introduction

Overview of C-Introduction-Keyword & Identifiers-Constants, Variables and Data types-Operators and Expression-Managing Input and Output statements.

Unit-II

Control Statements

Control Statements-Decision making and branching statement-Decision Making and looping statement-Array: Concepts -Single and Multi Dimensional array.

Unit-III

String and Function

Handling of Character Strings: Declaring and Initializing string variables-String handling functions.

User-Defined Functions: Need for user-defined function-the form of C function-Calling a function-Category of function-Passing arguments to function-Recursion.

Unit-IV

Structure and Pointers

Structures: Structure definition- Structure initialization-Arrays of structures-Arrays within structures.

Pointers: Introduction-understanding pointers-declaring and initializing pointers.

Unit-V

File Handling

File management in C: Introduction- defining, opening and closing a file – Input/output operations on file.

Text book

Title	: Programming in ANSI C
Author	: E.Balagurusamy
Publisher	: Tata McGraw Hill Publishing Company Ltd
Edition	: Second
Year	: 1997

Chapters (Relevant Topics Only)

Unit-I	: 2, 3, 4
Unit-II	: 5, 6, 7
Unit-III	: 8, 9
Unit-IV	: 10.1 to 10.7, 11.1 to 11.4
Unit-V	: 12

Reference

Title : Programming C
Author : Byron Gottfried
Publisher : Tata McGraw Hill
Year : 28th reprint 2005

Title : Programming C
Author : Stephen G.Kochen
Publisher : Pearson Education, Inc.,
Year : 3rd Edition, 2005

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Course	: B.Sc. Computer Science	Code	: MS21
Class	: I Year	No of Hrs allotted	: 4
Semester	: Second	Internal: 25	External: 75
Title of the Paper	: Object Oriented Programming with C++		
Paper	: Core (3)	No of credits	: 4

Course Objective

This course provides the basic concepts and techniques of object oriented programming. It trains the students to develop skills in writing object oriented C++ programs.

Unit-I

Principles of Object Oriented Programming(OOP): Software Evolution – OOP Paradigm – Basic concepts of OOP – Benefits of OOP – Object Oriented Languages – Applications of OOP. **Introduction to C++:** Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++.

Unit-II

Function in C++ - Main function – Function Prototyping – Call by reference – Return by reference – Function Overloading – Friend and Inline functions.

Unit-III

Classes and Objects: Specifying a class- member functions- Memory allocation of objects- Static data members- Static member functions- Objects as function arguments- Friendly functions- Pointers to members.

Constructors and Destructors - Operator overloading and type conversions.

Unit-IV

Inheritance Single Inheritance – Multilevel Inheritance – Multiple Inheritance Hierarchical Inheritance – Hybrid Inheritance. Pointers, Virtual functions and Polymorphism, Managing I/O Operations.

Unit-V

Working with files: Classes for file stream operations – Opening and closing a file – End-of-file detection – File pointers – Updating a file – Error handling during file operations – Command line arguments.

Text Book

Title : Object Oriented Programming with C++
Author : Balagurusamy
Publisher : Tata McGraw Hill, New Delhi
Edition : Second Edition
Year : reprint 2005

Chapters:

Unit – I : Chapters 1,2,3
Unit – II : Chapters 4,5
Unit – III : Chapters 6.1-6.5,6.7,6.10, 7
Unit – IV : Chapters 8,9
Unit – V : Chapters 11.

Reference:

Title : Microsoft C++
Author : Robert Lafore
Publisher : Galgotia Publications Pvt. Ltd.
Edition :
Year : 2000

Title : The Complete Reference C++
Author : Herbert Schildt
Publisher : Tata McGraw Hill, New Delhi.
Edition : 4th
Year : 2003

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Course	: B.Sc. Computer Science	Code	: MS22
Class	: I Year	No of Hrs allotted	: 4
Semester	: Second		
Title of the Paper	: Visual Basic Programming	No of credits	: 4
Paper	: Core (4)		

Course Objective

It gives elaborate information about visual basics, enables the student to write Simple and large programs, gives an idea about how to connect the front-end Applications with back-end software. Also gives an introduction about object and Class handling techniques.

Unit-I

Introduction to Visual Basic: Programming environment – working with forms – Developing an application – variables, data types and modules – procedures and Control structures – Arrays.

Working with controls Introduction – Creating and using control – Working with control arrays

Unit-II

Menus, Mouse events and Dialog boxes:

Introduction – Mouse events, dialog boxes.

Graphics, MDI and Flex grid:

Introduction – Graphics for application, Multiple Document Interface (MDI) – using the flex grid control.

Unit-III

ODBC and Data Access Objects:

Evolution of Computing Architectures – Data Access Options, Open database connectivity (ODBC) – Remote Data Objects.

Unit-IV:

Data environment and Data Report:

Introduction – Data environment designer, Data Report.

Object linking and embedding:

Introduction – OLE fundamentals.

Unit-V:

Files and File System Controls

Introduction – File System Controls – Accessing Files – Interface With Windows.

Text Book:

Title	: Visual Basic 6.0 Programming
Author	: Content Development Group, Chennai
Publisher	: Tata McGraw Hill Publishing Company Limited
Edition	: 1 st
Year	: reprint 2003

Chapters:

Unit – I	: 1,2
Unit – II	: 3,4
Unit – III	: 5,6
Unit – IV	: 7,8.1 to 8.2
Unit – V	: 17

Reference:

Title : Visual Basic 6.0 from the Ground up
Author : Gary cornell
Publisher : Tata McGraw Hill Publishing Company Limited
Edition : seventh edition
Year : reprint 2009

Title : Visual Basic 6.0 Programming Black Book
Author : Steven Holzner
Publisher : Dream Tech Press

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Course	: B.Sc. Computer Science	Code	: MSL21
Class	: I Year	No of Hrs allotted	: 4
Semester	: Second		
Title of the Paper:	C++ Programming Lab	No of credits	: 2
Paper	: Core (5)		

1. Simple programs using objects.
 - Largest and smallest in an array
 - Solving quadratic equation
 - Sorting elements in an array
 - Various arithmetic operations on two numbers
 - Matrix addition, multiplication.
2. Function overloading
 - Area / Volume of various shapes.
3. Program using – Static data members
 - Static member functions.
4. Arrays of objects – payroll calculation
 - Electricity bill calculation
5. Objects as function arguments – Adding two times
 - Adding two complex numbers.
6. Friend Function – Swapping two values.
7. Returning objects – Complex number additions.
8. Operator overloading
 - Increment and Decrement operations
 - Complex number addition
 - Matrix Addition, Multiplication
 - String Concatenation
9. Conversions of Data types
 - Class to Class
 - Class to Basic
 - Basic to Class
10. Programs to demonstrate
 - Single Inheritance
 - Multiple Inheritances
 - Multilevel Inheritance
 - Hybrid Inheritance
11. Files
 - Creation and display of sequential files
 - Working with multiple files
 - Processing the file – payroll, electricity bill
 - Updating file – inventory
 - Command line arguments
12. Program using exceptions handling
13. Program using templates.

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Course	: B.Sc. Computer Science	Code	: MS31
Class	: II Year	No of Hrs allotted	: 6
Semester	: Third	No of credits	: 5
Course Title	: Fundamentals of Data Structure		
Paper	: Core (6)		

Course Objective

Understanding Data Structure concept and knowing different ways of organizing data and performing various operation on that data.

Unit – 1

Introduction to Data Structure and SPARKS Language

Overview of Data Structure concept – Sparks Language and Control Statements - Create programs – Analyze programs.

Array

Array Concept - Axiomatization – Ordered Lists - Sparse Matrices Representation – Implementing an Array.

Unit – II

Stacks and Queues

Fundamentals – Representation – Operations - A Mazing problem –Evaluation of Expressions – Multiple Stacks and Queues – Linked Lists Singly Linked lists – Linked Stacks and Queues – Storage pool.

Unit –III

Linked List and String

Doubly Linked lists – Generalized lists – **String**: A Case Study – Data Representations for String – Pattern Matching in String

Unit – IV

TREES and Application

Basic Terminology – Binary Trees – Binary Tree Representation-Binary Tree Traversal – More on Binary Trees – Threaded Binary Trees Applications Of Trees _ Decision Trees – Game Trees.

Unit – V

Graphs and Application

Terminology and Representation: Introduction – Definitions and Terminology – Graph representation – Traversals - Connected Components and Spanning Trees – Shortest Paths and Transitive Closure.

Text Book

Title : Fundamentals of Data Structures
Author : Ellis Horowitz, Sartaj Sahni
Publisher : Galgotia Book source
Edition :
Year : 1983 Reprinted Edition.

Chapters (Relevant Topics Only)

Unit – I : 1 , 2
Unit – II : 3,4.1,4.2,4.4,4.5,4.7
Unit-III : 4.8,4.9,4.11
Unit – IV : 5.1 to 5.6, 5.8.2 to 5.8.3
Unit – V : 6.1 to 6.3

Reference

Title : Data Structures, Algorithms and Applications in C++
Author : Sartaj Sahni
Publisher : McGraw Hill International Edition
Year : 2000
Title : Data Structures
Author : A.A.Puntambekar
Publisher : Technical Publications Pune
Year : 2009

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Course	: B.Sc. Computer Science	Code	: MS32
Class	: II Year	No of Hrs allotted	: 6
Semester	: Third		
Title of the Paper:	Micro Processor and Peripherals	No of credits	: 5
Paper	: Core (7)		

Course Objective

This course enables the students to understand the architecture and assembly language programming of 8086 and to know about peripheral interfacing.

Unit-I

The Processors 8086

Register organization of 8086 – Architecture – Physical Memory Organization – General Bus Operation – I/O Addressing Capability – Special Processor Activities – Minimum mode 8086 System and Timings – Maximum Mode 8086 System and Timings.

Unit-II

The Art of Assembly Language Programming with 8086

A Few Machine Level Programs – Machine coding the programs - Programming with an Assembler – Assembly Language Example programs.

Unit-III

Special Architectural Features and Related Programming

Introduction to Stack - STACK Structure of 8086 - Interrupts and Interrupt Service Routines - Interrupt Cycle of 8086 – Non Maskable Interrupt - Maskable Interrupt (INTR) – Interrupt Programming – MACROS – Timing and Delays.

Unit-IV

Basic Peripherals and their Interfacing with 8086

Semiconductor Memory Interfacing – Interfacing I/O Ports – PIO 8255 (Programmable I/O Port) – Modes of Operation of 8255\

Unit-V

Special Purpose Programmable Peripheral Devices and their Interfacing

Programmable Interval Timer 8253 – The Keyboard/Display Controller 8279 – Programmable Communication Interface 8251 USART - DMA controller 8257, DMA Transfer and operations.

Text Book

Title : Advanced Microprocessors and Peripherals Architecture, Programming and Interfacing
Author : A.K.Ray, K.M.Bhurchandi
Publisher : Tata McGraw Hill
Edition : First
Year : 2000

Chapters:

Unit-I : 1.1 to 1.9
Unit-II : 2,3
Unit-III : 4
Unit – IV : 5.1 ,5.3-5.5.
Unit-V : 6.1, 6.3-6.4,7.1,7.2

Reference:

Title : The Intel 8086/8088 Microprocessor Architecture,
Programming, Design and interfacing
Author : Bhupendra Singh Chhabra
Publisher : Dhanpat Rai Publishing Company
Edition : First
Year : 1998

Title : The Intel 8086/8088 Microprocessor Architecture,
Programming, Design and interfacing
Author : Barry B Brey
Publisher : PHI , New Delhi
Edition : 4th
Year : 1998

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Course	: B.Sc. Computer Science	Code	: MS33
Class	: II Year	No. of Hrs allotted	: 6
Semester	: Third	No. of Credits	: 5
Paper	: Core (8)		
Course Title	: System Software		

Course Objectives

To know about system software such as assembler, compilers, interpreter and linkers, and enable the student to understand how the system software help the application programs to run smoothly.

Unit-I

Assemblers

Elements of assembly language programming- a simple assembly scheme-pass structure of assemblers-design of a two-pass assembler.

Unit-II

Macros and Macro Processors

Macro definition and call – macro expansion – nested macro call – advanced macro facilities – design of a macro preprocessor.

Unit-III

Compilers

Aspects of compilation – memory allocation – compilation of expression-compilation of control structures. Code optimization – Optimizing Transformation – Local Optimization – Global Optimization.

Unit-IV

Interpreter and Linker

Interpreters – overview of interpretation – a toy interpreter – pure and impure interpreters.

Linkers: Relocation and linking concepts – design of a linker – self relocating programs – linking for overlays loaders.

Unit-V

Software Tools

Software tools for program development – editors – debug monitors – programming environments – user interfaces.

Text book

Title : System Programming and Operating System
Author : D.M.Dhamdhare II revised edition
Publisher : Tata McGraw Hill Publishing Company Ltd
Edition : Sixth
Year : Reprint 2001

Chapters (Relevant Topics Only)

Unit-I : 4.1 – 4.4
Unit-II : 5
Unit-III : 6.1 to 6.4, 6.5.1 to 6.5.3
Unit-IV : 6.6, to 7.1 – 7.3, 7.5, 7.6
Unit-V : 8

Reference

Title : System Programming
Author : John.J.Donovon
Publisher : Tata McGraw Hill Publishing Company Ltd
Edition : 36th
Year : Reprint 2004

Title : System Software
Author : L.L. Beck
Publisher : Addison Wesley
Edition :
Year : 1997

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Course	: B.Sc. Computer Science	Code	: ENS31(s)
Class	: II	No of Hrs allotted	: 2
Semester	: III Semester		
Title of the Paper	: Software Development	No of credit	: 2
Paper	: NME-I		

Unit – I

Flowchart – Purpose – Examples – Problem solving with computers.

Unit – II

Application of computers – Home computers -Education– Word processing – Database Management System – Spreadsheet.

Textbook

Computer Primer

- Dharma Rajaraman, V. Rajaraman
- Eastern Economy Edition PHI
Second edition 1996.

Chapters :

Unit – I : Chapter 5 & 6

Unit – II : Chapter 16.1 to 16.5

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Course	: B.Sc. Computer Science	Code	: MS41
Class	: II Year	No of Hrs allotted	: 5
Semester	: Fourth	No of credits	: 5
Title of Paper	: RDBMS & Oracle Programming		
Paper	: Core (9)		

Course Objective

Understanding RDBMS concept and learning SQL operations & PL/SQL programming in Oracle.

Unit-I

Introduction to Database Systems and Structure

Purpose of Database System – View of Data – Data Models – Database Language – Transaction Management – Storage Management – Database Administrator – Database User.

Unit-II

Entity and Relational Model

Basic Concepts – E-R Diagram – Weak Entity sets – Design of an E-R Database Schema – E-R Schema to Tables – Structure of Relational Database – Relational Algebra – Tuple Relational Calculus – Domain Relational Calculus.

Unit-III

Creating and Managing Oracle database objects

SQL Language: Data Definition Language (DDL) – DDL Statements - Data Manipulation Language (DML) – DML Statements - Transaction Control Language (TCL) – TCL statements - Data Control Language (DCL) and statements, **Table:** Create, Maintain and Manipulate, **Views :** Create – Retrieve – Insert, Update and Delete data through a View – Drop a View. **Sequence :** Create, Maintain and Using Sequence, **Synonyms :** Create Private and Public Synonyms, **Index :** Create and Maintain Index.

Unit – IV

Oracle function and PL/SQL

Single row function Conversion function – Character function – Number function – Date function. **Group function** Group by clause – HAVING clause – JOIN – Set operators – subqueries. Overview of PL/SQL – Variable – Control Structure – IF THEN, ELSE, ELSEIF – LOOPS: Basic – While – FOR – Nested Loops.

Unit-V

Errors, Exception and stored programs

Errors: Types of errors – Handling Methods, **Exception:** Types of exception – Handling Procedure, **Stored programs: Procedure:** Client / Server side procedure – Parameters – Deleting procedures, **Package:** Specification – Package body – Accessing programs and variable - Removing Package, **Triggers:** Triggering events – Statement level / Row level Triggers – order of firing – Instead of Triggers – Event Triggers – Enabling and Disabling Triggers.

Text Books

1. **Title** : Database System Concepts
Author : Silberschatz Korth and Sudharshan
Publisher : Tata McGraw Hill
Edition : Third
Year : 1996

2. **Title** : ORACLE 8i DBA : SQL and PL/SQL Certification Bible
Author : Damir Bersinic, Stephen Giles, Susan Ibach, Myles Brown
Publisher : Hungry Minds IDG Books India (P) Ltd
Edition : First
Year : Oct-2001

Chapters: (Relevant Topics Only)

Unit – I	: 1.1 to 1.8	(Text Book 1)
Unit – II	: 2.1,2.4 to 2.6,2.8,2.9,3.1 to 3.4	(Text Book 1)
Unit – III	: 2,5,8	(Text Book 2)
Unit – IV	: 3,9,10	(Text Book 2)
Unit – V	: 12,13	(Text Book 2)

Reference:

Title : Oracle Complete Reference
Author : George Kotch and Kevin Lancy
Publisher : Tata Mc-Graw Hill Edition
Year : 1998

Title : Easy Oracle PL/SQL Programming :Get Started fast with Working PL/SQL Code Example
Author : **John Garmany**
Publisher : **Easy Oracle Series**
Year : 2005

Title : **An Introduction to Database Systems**
Author : **Bipin C.Desai**
Publisher : West Publishing company
Edition : **Reprint**
Year :

1990

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Course	: B.Sc. Computer Science	Code	: MS42
Semester	: Fourth	No. of Hrs Allotted	: 5
Class	: II		
Paper	: Core (10)		
Course Title	: Computer Graphics	No. of Credits	: 5

Course Objective

Understanding the necessity of representing data in pictorial form and knowing how to create and manipulate an image with the help of computer.

Unit-I

Line generation and Graphics primitives

Overview of Graphics concept - Line –Line segment –Pixels and Frame-Buffer– Vectors– Vector Generation Algorithm–Bresenham’s Algorithm–Character Generation.

Unit –II

Display file and Polygon

Display file concept –Normalized Device co-ordinates –Display File-Display File Structure –Display file algorithm-Polygons - Polygons Representation – Entering Polygons – Inside test – Polygon Interfacing Algorithms

Unit –III

2DTransformation

Transformation Concept – 2DTransformations (2D): Scaling – Rotation – Translation – Homogenous Co-ordinates – Rotation about an arbitrary point.

Unit –IV

Segments and Segment operations

Segmentation Concept- Segment table: Creation –Closing –Deleting – Renaming – Saving and Showing Segment.

Unit –V

Clipping and Windowing

Clipping: Clipping Concept – Clipping a line segment: Cohen Sutherland Algorithm– Clipping a polygon: Sutherland Hodgeman Algorithm – Windowing: Windowing concept – Multiple Windowing.

Text book

Title	: Computer graphics
Author	: Steven Harrington
Publisher	: McGraw-hill international editions
Edition	: Second
Year	: 1987

Chapters (Relevant topics only)

Unit – I	: 1
Unit – II	: 2, 3
Unit – III	: 4
Unit – IV	: 5
Unit – V	: 6

Reference

Title : Computer Graphics
Author : Donald Hearn, M.Pauline Baker
Publisher : PHI – Prentice Hall
Edition : Second
Year : 2001

Reference

Title : Computer Graphics - Principles and Practice
Author : Foley, Van Dam
Publisher : Addison Wesley
Edition : Second
Year : 1997

THIAGARAJAR COLLEGE: AUTONOMOUS: MADURAI – 9
(Re – Accredited With ‘A’ Grade by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MSL41
Class	: II Year	No of Hrs allotted	: 4
Semester	: Fourth	No of credits	: 2
Title of the Paper : Oracle Programming Lab			
Paper	: Core(11)		

1. Performing DDL, DML operations in a table.
2. Creating and destroying Views/ Synonyms / Sequence.
3. Creating report
4. Writing procedures and passing values.
5. Setting predefine Exception
6. Creating User defined Exception
7. Writing Function
8. Creating Package
9. Setting Cursor
10. Creating Triggers
11. Creating a Chart
12. Splitting a table values and store them into multiple tables.
13. Simple PL/SQL programs(Non-database problems).

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: U.G	Code	: ENS 41(I)
Class	: Second Year	No of Hrs allotted	: 2
Semester	: IV	No of credits	: 2
Title of the Paper : Internet Applications			
Paper	: NME-II		

Unit-I

Introduction to Internet-Internet access-Internet Basics-Internet Addressing-
WWW(World Wide Web).

Unit-II

Web Pages & HTML tags-Web Browsers –Searching the Web-E-Mail-
Newsgroups.

Text books

Fundamentals Of Internet Technology
-Alexis Leon & Mathews Leon
Vikas Publishing House Pvt Ltd(1999).
(Relevant Topics Only).

Unit-I : Chapters-21

Unit-II : Chapters-22

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS51
Class	: III Year	No. of Hrs Allotted	: 5
Semester	: Fifth	No. of Credits	: 4
Course Title	: Fundamentals of Computer Algorithm		
Paper	: Core(12)		

Course Objective

To introduce the various design techniques as general methods.
To apply these techniques to specific problems and compare them.

Unit – I

Introduction

Algorithm specification – Recursive Algorithms – Performance analysis – Space complexity – Time complexity – Asymptotic Notation – Practical – Complexities
Performance measurement.

Unit – II

Divide and Conquer

General method – Binary search – Mergeshot – Quicksort – Performance Measurement – Strassen’s matrix multiplication.

Unit – III

Greedy method

General method – Knapsack problem – Job sequencing with deadlines – Optimal storage on tapes.

Unit – IV

Dynamic programming

General method – Optimal binary search trees –String editing – O/I Knapsack.

Unit – V

Backtracking

The general method – The 8 queen problem –Sum of subsets – Graph coloring

Textbook:

Title : Fundamental of Computer Algorithms
Author : Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran
Publisher : Galgotia Publications Pvt.Ltd.
Year : 2001.

Unit I : Chapter1 Sections 1.1,1.2,1.3
Unit II : Chapter2 Sections 3.1,3.2,3.4,3.5,3.7
Unit III : Chapter4 Sections 4.1,4.2,4.4,4.6
Unit IV : Chapter5 Sections 5.1,5.4,5.6,5.7
Unit V : Chapter7 Sections 7.1,7.2,7.3,7.4
(Relevant Topics only)

Reference book

Title : Computer Algorithms, Introduction to Design and Analysis,
Third Edition.
Author : Sara Base, Allen Van Gelder
Publisher : Pearson Education (Singapore) Pvt.Ltd.
Year : Fifth Indian Reprint 2002.

Title : Theory and problems of data structure
Author : Seymour Lipsechutz, sechaums outline series
Year : 1986

THIAGARAJAR COLLEGE: AUTONOMOUS: MADURAI – 9
(Re – Accredited With ‘A’ Grade by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS52
Class	: III Year	No of credits	: 4
Semester	: V	No of Hrs allotted	: 5
Title of the Paper	: Web Technology		
Paper	: Core (13)		

Course Objective

This course enables the students to plan and develop well designed websites. It concentrates on the tools possible and offers the depth and vigorous treatment of theory and practice needed to.

Unit-I

Introduction

What is Internet?- History of Internet- Internet services and accessibility-Uses of Internet-Protocols-Web Concepts- Internet Standards

JAVA NETWORK PROGRAMMING

Introduction – UDP/IP and TCP/IP Communications- Sockets-Multicast Sockets – Remote Method Invocation – Protocol handler- Content handlers.

Unit-II

HTML

Introduction-SGML-HTML Document – Head Section – Body Section – HTML Forms.

DHTML

Introduction – cascading Style sheets – DHTML Document Object Model and Collections – Event handling – Filters and Transitions – Data Binding

Unit-III

JavaScript

Introduction – Language Elements – Objects of JavaScript – Other Objects.

VBSCRIPT

Introduction – Embedding VBScript Code in an HTML Document- Comments – Variables – Operators – procedures – Conditional statements – looping constructs – objects and VBScript – Cookies.

Unit-IV:

SERVLETS : Introduction – Advantages of Srevlets over CGI – Installing Servlets – The Servlet Life Cycle – Servlet API – A simple Servlet – Handling HTTP GET Requests – Handling HTTP Post Request – Cookies – Session Tracking – Multi-tier Applications using Database Connectivity – Servlet Chaining

JavaScript pages

Introduction – Advantages of JSP – Developing First JSP – Components of JSP – reading Request Information – Retrieving the DATA Posted from a HTML File to a JSP file – JSP sessions – cookies – disabling sessions

Unit – V

ACTIVE SREVER PAGES (ASP)

Introduction – advantages of using ASP – First ASP Script – Processing of Asp Scripts with forms – Variables and Constructs – subroutines – Include/ Virtual – ASP Cookies – ASP objects – Connecting to Data with ASP

EXTENSIBLE MARK-UP LANGUAGE (XML)

Introduction – HTML vs XML – Syntax of the XML Document – XML Attributes – XML Validation – XML DTD – DTD Elements , Attributes , Entities , Validation , XSL transformation , Namespace and schema.

TEXT BOOK

Title : Web Technology A Developer's –Perspective
Author : N.P.Gopalan and J.Akilandeswari.
Publisher : PHI Learning Pvt.Lt
Edition : 4th
Year : 2010

Chapters: (Relevant Topics Only)

Unit – I : 1, 3
Unit – II : 4,7
Unit – III : 5,6
Unit – IV : 10,11
Unit – V : 12,8

Reference Books:

Title : HTML,CSS , JavaScript, perl , phython & Php (web Standard)
Author : Steven M.Schafer
Publisher : Wiley dream tech
Edition : Reprint
Year : 2005

Title : World wide web design with HTML
Author : Steven M.Schafer
Publisher : McGraw-Hill
Edition : Reprint
Year : 2001

Title : Internet and World wide Web How to program
Author : Dietel & Dietel , Gold berg
Publisher : Wiley dream techPerson Eduaction Pvt. Ltd.,
Edition : Third
Year : 2005

THIAGARAJAR COLLEGE: AUTONOMOUS: MADURAI – 9
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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS53
Class	: III Year	No of Hrs allotted	: 5
Semester	: Fifth		
Title of the Paper:	Java Programming	No of credits	: 4
Paper	: Core (14)		

Course Objective

This course deals with Java language fundamentals, classes, objects, Overloading, Inheritance, Packages, Multithreading, Exception handling, Java Applet and AWT

Unit-I

Introduction

Java's Lineage – The Creation of Java – Why Java is Important to the Internet – Java's Magic: The Byte code – The Java Buzzwords – An overview of JAVA.

Introducing classes

Class fundamentals – Declaring objects – Assigning object reference variables – Introducing methods – Constructors – The this Keyword – Garbage collection – The finalize() method.

Arrays

One-Dimensional Arrays – Multidimensional Arrays – Alternative Array Declaration Syntax

Unit-II

A Closer look at Methods and Classes

Overloading methods – Using objects as parameters – A Closer look at Argument passing – Returning objects – Recursion – Introducing Access control – Understanding static – Introducing final – Arrays Revisited – Introducing Nested and Inner classes – Exploring the String class – Using command line Arguments.

Inheritance

Inheritance basics – Using super – Creating a Multilevel hierarchy – when constructors are called – Method overriding – Dynamic method dispatch – Using abstract classes – Using final with Inheritance – The Object class.

Unit-III

Packages and Interfaces

Packages – Access protection – Importing packages – Interfaces.

Exception Handling

Exception handling fundamentals – Exception types – Uncaught Exceptions – Using try and catch – Multiple catch clauses – Nested try statements – throw – throws – finally – Java's Built-in Exceptions – Creating your own exception Subclasses – Using Exceptions.

Unit-IV

Multithreaded Programming

The Java Thread Model – The Main Thread – Creating a Thread – Creating Multiple Threads – Using isAlive() and join() – Thread priorities

Applet fundamentals

Applet Basics: Applet Class – Applet Architecture – Simple Applet display method – Requesting repainting – HTML Applet tag – Passing parameter to Applet – Improving the Applet.

Introducing the AWT

Working with windows, Graphics and Text, AWT classes - Window Fundamentals - Working with Frame windows - Creating a frame window in an applet - Creating a windowed program - Displaying Information within a window

Unit-V

Working with Graphics and Text

Working with graphics - working with color – setting the paint mode - working with fonts - managing text output using fontmetrics -exploring text and graphics.

Using AWT Controls, Layout Managers, and Menus

Control fundamentals – Labels – Using buttons – Applying check boxes – checkbox group – choice controls – Using lists – Managing scroll bars – Using a Text Field – Using a Text Area – Understanding Layout Managers – Menu Bars and Menus – Dialog Boxes – File Dialog.

Text Book

Title : The Complete Reference Java 2
Author : Herbert Schildt
Publisher : Tata McGraw Hill
Edition : Fourth
Year : 2000

Chapters:

Unit – I : 1,2,6
Unit – II : 7,8
Unit-III : 9,10
Unit-IV : 11,19,21
Unit-V : 21,22

Reference:

Title : Core JAVA 2 Volume-1 Fundamental
Author : CAY S.Horstmann Gary Cornell
Publisher : Pearson Education
Edition : SeventhYear 2005

Title : Programming with JAVA
Author : E.Balagurusamy
Publisher : Tata McGraw Hill

THIAGARAJAR COLLEGE: AUTONOMOUS: MADURAI – 9
(Re – Accredited With ‘A’ Grade by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS61
Class	: III Year	No of Hrs allotted	: 5
Semester	: sixth		
Title of the Paper	: Data communication and Networking	No of credit	: 4
Paper	: Core (15)		

Course Objective

This course helps the students to understand the concepts and mechanisms of tele-communication and networking.

Unit-I

Introduction – Introduction - Basic concepts - The OSI model

Unit-II

Transmission media: Guided Media - Unguided media – Transmission impairment – Performance – Wavelength – Shannon capacity – Media comparison.

Error detection and correction: Types of Errors – Detection – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cyclic Redundancy Check (CRC) – Checksum – Error correction.

Unit-III

Data Link control and protocol: Line discipline – Flow control – Error control – Asynchronous Protocols – Synchronous Protocols – Character-oriented Protocols – Bit-oriented Protocols.

Local Area Networks: Project 802 - Ethernet – Other Ethernet networks – Token Bus – Token Ring.

Unit-IV

Switching: Circuit switching – Packet switching – Message Switching.

Networking and Internetworking devices: Repeaters - Bridges – Routers - Gateways – Other devices – Routing Algorithms – Distance Vector Routing – Link State Routing.

Unit-V

TCP/IP Protocol Suite: Overview of TCP/IP – Network Layer – Addressing – Sub netting – Other Protocols in the Network Layer – Transport Layer.

Application Layer: Client/Server Model – Bootstrap protocol (BOOTP) and Dynamic Host Configuration Protocol (DHCP) – Domain Name System (DNS) – Telnet – File Transfer Protocol (FTP) – Trivial File Transfer Protocol (TFTP) – Simple Mail Transfer Protocol (SMTP) – Simple Network Management Protocol (SNMP) – Hyper Text Transfer Protocol (HTTP) - World Wide Web (WWW) .

Text Book

Title : Data Communications and Networking
Author : Behrouz A.Forouzan
Publisher : Tata McGraw Hill Publishing Company Limited
Edition : Second Edition update
Year : 2005

Chapters:

Unit-I : 1.1 to 1.4, 2.1 to 2.5, 3.1 to 3.3
Unit-II : 7, 9
Unit-III : 10, 11.1 to 11.4, 12.1 to 12.5
Unit-IV : 14, 21
Unit-V : 24, 25

Reference:

Title : Computer Networks
Author : Andrew S.Tanenbaum
Publisher : Prentice Hall of India Pvt Ltd.
Edition : Fourth
Year : 2004

Title : Data Communications and Computer Networks
Author : Prakash C.Gupta
Publisher : Prentice Hall of India Pvt Ltd.

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS62
Semester	: Sixth	No. of Hrs Allotted	: 5
Paper	: Core (16)	No. of Credit	: 4
Class	: III		
Title of the Paper : Operating Systems			

Course Objective

Understanding the importance of OS, types and its various resource scheduling and management techniques.

Unit-I

Introduction to OS and its Structure

OS basic concepts–Types of OS: Simple batch– Multi programmed – Time sharing–Parallel – Distributed Systems.

Unit-II

Process and Process Synchronization

Process Basic Concept–Process Scheduling-Operation on Process–Co-operating Process– Inter process Communication – Critical Section concepts and its problem – synchronization tool- Semaphores.

Unit-III

CPU Scheduling and Deadlock

Scheduling basic concepts – Scheduling criteria - Scheduling Algorithms

Deadlock: Deadlock characterization – Methods of handling Deadlocks – Deadlock prevention - Avoidance- Detection and Recovery.

Unit-IV

Memory Management and Virtual Memory

Memory Management Basic Concepts- Swapping – Contiguous Allocation – Paging- Segmentation – Virtual Memory Concept – Demand Paging – Page Replacement – Page Replacement Algorithms.

Unit-V

File-System and Disk Scheduling

File Concepts – Access Methods – Allocation Method –Protection –Disk Structure – Disk Scheduling.

Text book

Title	: Operating System Concept
Author	: Silberschatz Galving
Publisher	: Addison Wesley
Edition	: Fifth Edition
Year	: 1997

Chapters (Relevant Topics only)

Unit – I	: 1.1 to 1.7
Unit – II	: 4.1 to 4.4, 4.6 & 6.2 to 6.4
Unit – III	: 5.1 to 5.3 & 7.2 to 7.7
Unit – IV	: 8.2 to 8.6 & 9.1 to 9.6
Unit – V	: 10.1 to 10.4, 11.2, 13.1, 13.2

Reference

Title : Operating Systems
Author : William Stallings
Publisher : PHI
Edition : Second Edition
Year : 2000

Title : Introduction to Operating Systems
Author : Philp Avery Johnson
Publisher : iUniverse, Inc.,
Edition :
Year : 2004

THIAGARAJAR COLLEGE: AUTONOMOUS: MADURAI – 9
(Re – Accredited With ‘A’ Grade by NAAC)
DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS63
Class	: III Year	No of Hrs allotted	: 5
Semester	: Sixth		
Title of the Paper:	Software Engineering	No of credits	: 4
Paper	: Core(17)		

Course Objective

To orient towards becoming efficient programmers by learning best programming practices and testing techniques.

UNIT I: INTRODUCTION TO SOFTWARE ENGINEERING

Definitions – Size Factors – Quality and Productivity Factors – Managerial Issues.

UNIT II: PLANNING A SOFTWARE PROJECT

Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

UNIT III: SOFTWARE COST ESTIMATION

Software Cost Factors – Software Cost Estimation Techniques – Staffing Level Estimation – Estimating Software Maintenance Costs.

SOFTWARE REQUIREMENTS DEFINITION

Software requirement specification - Formal Specification Techniques.

UNIT IV: SOFTWARE DESIGN

Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-time and Distributed System Design – Test Plans.

Implementation Issues: Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation Guidelines.

UNIT V: VERIFICATION AND VALIDATION TECHNIQUES

Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification – Software Maintenance.

Text Book:

Title	: Software Engineering
Author	: Richard Fairley
Publisher	: Tata Mcgraw-Hill
Edition	: Fourteenth reprint
Year	: 2002

Chapters:

Unit – I	: 1
Unit – II	: 2
Unit – III	: 3,4.1,4.2
Unit – IV	: 5,6
Unit – V	: 8,9

Reference Books:

Title : Software Engineering Concepts
Author : Roger S. Pressman
Publisher : McGraw Hill
Edition : 5th
Year : 2001

Title : Software Engineering
Author : IAN SOMMERVILLE
Publisher : Pearson Education Asia
Edition : 8th
Year : 2008

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS64
Semester	: Sixth	No. of Hrs allotted	: 5
Paper	: Core (18)	No. of Credits	: 4
Title of the Paper	: Data Mining and Warehousing		

Course Objective

Understanding knowledge base database, Discovering and Mining common pattern from data sets.

UNIT - I

DATA MINING: Introduction - Data Mining - Success Stories - Main Reason for Growth of Data Mining Research - Recent Research Achievements - Graphical Models and Hierarchical Probabilistic Representations – New Applications - Trends that Effect Data Mining - Research Challenges - Test beds and Infrastructure.

DATA MINING FROM A BUSINESS PERSPECTIVE: Introduction - From Data Mining Tools to Solutions – Evolution of Data Mining Systems - Knowledge Discovery Process - Data Mining Supporting Technologies Overview - Data Mining Techniques

UNIT - II

DATA TYPES, INPUT AND OUTPUT OF DATA MINING ALGORITHMS: Introduction - Instances and Features - Different Types of Features(Data) – Concept Learning and Concept Description - Output of Data Mining - Knowledge Representation.

DECISION TREES – CLASSIFICATION AND REGRESSION TREES: Introduction -Constructing Classification Trees - CHAID (Chi-square Automatic Interaction Detection) -CART (Classification and Regression Trees) - Regression Trees - General Problems in Prediction of Classes for Data with Unknown Class Value – Pruning – Introduction - Model Estimation

UNIT - III

PREPROCESSING AND POSTPROCESSING IN DATA MINING: Introduction - Steps in Preprocessing- Discretization - Feature Extraction, Selection and Construction – Missing Data and Methodological Techniques for Dealing it - Example of Dealing Missing Data in Decision Tree Induction – Post processing.

ASSOCIATION RULE MINING: Introduction - Automatic Discovery of Association Rules in Transaction Databases -The Apriori Algorithm - Shortcomings.

UNIT – IV

ALGORITHMS FOR CLASSIFICATION AND REGRESSION: Introduction - Naïve Bayes - Multiple Regression Analysis – Logistic Regression - k-Nearest Neighbour Classification - GMDH (Group Method of Data Handling) - Evolutionary Computing and Genetic Algorithms

UNIT - V

CLUSTER ANALYSIS: Introduction – Partitional Clusterings - k-medoids -
Modern Clustering Methods – Birch- DBSCAN

Text Book:

Title : **Insight into Data Mining THEORY AND PRACTICE**
Author : K.P.Soman, Shyam Diwakar and V.Ajay
Publisher : Prentice Hall of India Private Limited
Edition :
Year : 2006

Chapters:

Unit –I : Chapters 1 and 2
Unit –II : Chapters 3 and 4
Unit – III : Chapters 5 and 7
Unit –IV : Chapter 9
Unit –V : Chapter 11- Sections 11.1 – 11.6

Reference Books:

Title : Data Mining Concepts and Techniques
Author : Jiawei Han and Micheline Kamber,
Publisher : Morgan Kaufmann Publishers, An Imprint of Elsevier
Edition : 2nd
Year : 2006

Title : Data Mining – Practical Machine learning Tools and Techninques
Author : Ian H.Witten & Eibe Frank, Mirgan
Publisher : Morgan Kaufmann Publishers, An Imprint of Elsevier
Edition : 2nd
Year : 2008

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code No	:
Class	: II/III	No of Hrs allotted	: 5
Semester	: IV/V		
Title of the Paper:	Multimedia Technology - Elective	No of credits	: 5
Paper	: Elective - I/II		

Course Objective

This course helps students to understand the practical use of multimedia as well as how multimedia products are developed by acquiring, integrating and producing the various multimedia elements.

Unit-I

Introduction

What is multimedia – Resources for multimedia developers – Types of products – Evaluations – Operating systems and software – multimedia computer architecture.

Unit-II

Text and Graphics

Elements of Text – Text data files – Using text in multimedia applications – Hypertext – Elements of graphics – Images and color – Graphic file and application formats – Obtaining images for multimedia use – Using graphics in multimedia applications.

Unit-III

Digital Audio

Characteristics of sound and Digital Audio – Digital Audio systems – MIDI – Audio file formats – Using audio in Multimedia applications.

Unit-IV

Digital Video and Animation

Background on video – Characteristics of Digital Video – Digital Video data sizing – Video Capture and Playback Systems – Animation – Using Digital Video in Multimedia Applications.

Unit-V

Product Design and Authoring Tools

Building blocks – Classes of Products – Content Organizational Strategies – Story Boarding – Authoring Tools – Selecting the right authoring Paradigm – HTML and Web authoring.

Text Book

Title : Multimedia Technology and Applications
Author : David Hillman
Publisher : Galgotia Publications Pvt. Ltd
Edition :
Year : 1998

Chapters: (Relevant topics only)

Unit – I : 1,2,3
Unit – II : 4,5
Unit – III : 6
Unit – IV : 7
Unit – V : 8,9,10

Reference:

Title : Multimedia making it work
Author : Tay Vaughan
Publisher : McGraw Hill Company
Edition : 7th
Year : 2008

Title : Multimedia in Action
Author : James E.Suman
Publisher : Vikas Publishing House
Year : 1997

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code No	:
Class	: II/III		
Semester	: IV/V	No. of Hrs allotted	:5
Paper	: Elective- (I/II)	No. of Credits	:5
Title of the Paper	: E-Commerce		

Course Objective

To know about what electronic commerce is, how it is being conducted and Managed and what are the major opportunities, limitation, issues and risks. It also give an information about how mobile communication is utilized in electronic Commerce. It also includes how to do business electronically over network.

Unit –I

Introduction to E-commerce

E-commerce frame work – E-commerce and media convergence – the Anatomy of E-commerce applications – E-commerce organization applications.

Network security and firewalls

Client/Server network security – Emerging Client/Server security threats – Firewalls and Network security – Data and Message security – Challenge Response systems – Encrypted Documents and Email.

Unit-II

E-commerce and WWW

Architectural framework for E-commerce-WWW as the Architecture – Web background: Hypertext publishing – technology behind the web – Security and the web.

Consumer oriented E-Commerce Consumer oriented applications Mercantile process models – Mercantile Models from the consumers perspective – Mercantile Models from the Merchant’s Perspective.

Unit-III

Electronic payments systems – Types of Electronic payment systems- digital token based electronic payment systems- smart cards and electronic payment systems – Credit card based electronic payment systems – Risk and electronic payment systems – Designing electronic payment systems.

Interorganizational Commerce and EDI Electronic data interchange – EDI applications in Business– EDI:Legal, Security, and privacy issues EDI and E-commerce.

Unit-IV

EDI Implementation, MIME and value added networks : Standardization and EDI - EDI software Implementation – EDI Envelope for Message Transport – Intraorganizational

E-Commerce: Internal Information Systems – Macroforces and Internal commerce – Work – Flow Automation and coordination .

Unit-V

Advertising and Marketing on the Internet : The new age of Information based marketing – Advertising on the internet – Charting the on-line marketing process – Market research Mobile and Wireless computing fundamentals : Mobile computing framework – wireless Delivery Technology and Switching Methods – Mobile information access devices – Mobile data internetworking standards- Cellular data communication protocols – mobile computing application – Personal communication Services.

Text Books

Title : Frontiers of Electronic Commerce
Author : Ravi Kalakota and Andrew.B.Whinston
Publisher : PEARSON education
Edition : Twelfth
Year : Indian reprint 2004

Chapters: (Relevant Topics only)

Unit – I : 1.1 to 1.3,1.5,5.1 to 5.6
Unit – II : 6.1 to 6.5, 7.1 to 7.4
Unit – III : 8.1 to 8.6, 9.1 to 9.4
Unit – IV : 10.1 to 10.5, 11.1 to 11.3
Unit – V : 13.1 to 13.4, 20.1 to 20.7

Reference:

Title : E-Commerce – Strategy, Technologies and application
Author : David Whiteley
Publisher : Tata McGraw Hill
Edition : Eighth
Year : reprint 2004
Title : Electronic Commerce: Framework, Technologies and application
Author : Bharat Bhasker
Publisher : Tata McGraw Hill
Year : 2006

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code No	:
Semester	: IV/V	No. of hours allotted	: 5
Paper	: Elective I/II	No. of Credits	: 5
Class	: II/III		

Title of the Paper: VB.NET Technology

Course Objectives

It provides an introduction to .NET Framework and deals with programming in VB.NET.

Unit – I

Introduction to Visual Basic .NET

Creating a Windows Application – Creating Web Application – Creating a Console Application – New in VB .NET – The .NET Framework and the Common Language Runtime – Building VB .NET Applications – The VB IDE.

The VB .NET Language

Constants – Enumerations – Variables – Data Types – Type Conversion – Arrays – Strings – Operators – Control Statements – Procedures – Functions – Properties – Scope – Exception Handling.

Unit – II

Windows Forms

Form Properties – MsgBox – InputBox – Multiple Forms – MDI Applications – Dialog Boxes – Mouse Events – Keyboard Events.

Controls

Text Boxes – Rich Text Boxes – Labels – Link Labels – Buttons – Checkboxes – Radio Buttons – Panels – Group Boxes.

Unit – III

Other Controls & Advanced controls

List Boxes – Checked List Boxes – Combo Boxes – Picture Boxes – Scroll Bars – Splitters – Track Bars – Pickers – Notify Icons – Tool Tips – Timers – Menus – Built- In Dialog Boxes – Printing -Image Lists – Tree Views – List Views – Toolbars – Status Bars – Progress Bars – Tab Controls.

Unit - IV

Object-Oriented Programming

Classes – Objects – Structures – Modules – Constructors – Data Members – Methods – Properties – Events – Overloading – Class Libraries – Namespaces – Destructors – Inheritance – Interfaces – Shadowing – Polymorphism.

Unit – V

Data Access with ADO.NET

Server Explorer – Data Adapters and Datasets – ADO.NET Objects – New Data Connection – Dataset – Data Provider – Data Adapter Controls – MS Jet Database – Relational Databases – Data Views – Data Binding – Binding Controls to Databases- Handling Databases in Code.

Text Book:

Title : Visual Basic .NET Programming Black Book
Author : Steven Holzner
Publisher : DreamTech Press
Edition :
Year : 2005

Chapters: (Relevant Topics Only)

Unit I : 1, 2, 3
Unit II : 4, 5, 6
Unit III : 7, 8, 9
Unit IV : 10, 11, 12
Unit V : 21, 22, 23

Reference Book:

Title : Programming Visual Basic .NET
Author : Jesse Liberty, Dave Grundgeiger
Publisher : O'Reilly
Edition : 2nd
Year : 2003

Title : Visual Basic Programming Black Book
Author : Steven Holzner
Publisher : DreamTech Press

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code No	:
Semester	: IV/V	No. of Hrs Allotted	: 5
Paper	: Elective – I/II		
Title of the Paper	: Artificial Intelligence-Elective	No. of Credits	: 5
Class	: II/III Year		

Course Objective

To introduce the basic concepts of Artificial Intelligence and the search techniques for specific AI problems.

Unit - I

Understanding AI

What is AI? The problem, assumptions, AI technique, level of the model, criteria for success Problems, problem spaces and search, production systems, production system characteristics, issue in the design of search programs.

Unit - II

Searching Techniques

Heuristic search techniques. Generate and test, Hill climbing, best – first search, problem reduction, constraint satisfaction, Means–Ends analysis.

Unit - III

Knowledge Representation

Knowledge Representation Issue: Representation and mappings - approaches, issue in knowledge representation, frame problem.

Using predicate Logic: Representation of simple facts in logic, instance and ISA relationships, computable function and predicates, resolution, natural deduction.

Unit IV

Knowledge Reasoning

Representing knowledge using rules, Procedural versus declarative knowledge, logic programming, forward versus backward reasoning, matching control knowledge.

Unit V

Reasoning and Searching

Symbolic reasoning under uncertainty, Introduction and logic for non monotonic reasoning, Implementation issues, implementation of DFS, Breadth–First search.

Textbook

Title : Artificial Intelligence
Author : Elaine Rich, Kevin Knight
Publisher : Tata McGraw Hill Ltd
Edition : 2nd
Year : 1992

Chapters: (Relevant Topics Only)

Unit I : 1.1 – 1.5, 2.1, 2.5
Unit II : 3.1 –3.6
Unit III : 4.1-4.4, 5.1-5.5
Unit IV : 6.1-6.5
Unit V : 7.1-7.6

Reference

Title : Artificial Intelligence : A Modern Approach
Author : Russel
Publisher : Pearson Education, Inc.,
Edition : 2nd
Year : 2003

Title : Artificial Intelligence in perspective
Author : Daniel G.Bobroul
Publisher : MIT Press
Edition :
Year : 1994

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DEPARTMENT OF COMPUTER SCIENCE
(From 2011 – 2014 Batch Onwards)

Course	: B.Sc. Computer Science	Code No	:
Class	: II/III		
Semester	: IV/V	No. of Hrs allotted	: 5
Paper	: Elective-I/II	No. of Credits	: 5
Title of the Paper	: Client Server Computing		

Course Objective

To enable the student to understand the concept of client server technology and computing. Also provides a detail description about client server concepts, architecture, databases, protocols and computing.

Unit –I

Introduction of Client/Server computing – Advantage of Client/Server computing – Technology revolution – connectivity – User productivity – How to reduce network traffic – Vendor independence – Faster delivery of systems.

Unit – II

Components of Client/Server Applications:

The Client: - The role of the client – client services – request for service – the server – the role of the server – server functionality in detail – the network operating system – what are the available platforms? – The server operating system.

Unit-III

Connectivity – Open system interconnect – Communication interface technology – Inter process communication – wide area network technologies – Network Management – Client/Server systems development – software – factors driving demand.

Unit-IV

Hardware/network acquisition – service and support – system administration – Network management – Remote systems management – security – LAN and network management issues – Licensing.

Training: - Advantages of GUI applications – System administrator Training – Programmer’s resistance to new technologies – database administrator training – End user training – Training delivery technology.

Unit-V

The future of Client/Server computing: What’s in store for networking – what’s in store for software development – enabling technologies – transformational systems. Case studies:

- I) Major pipeline company nominations, scheduling and allocation (NSA) system.
- II) Life insurance company (model office), Blue cross of Atlantic.

Text Book:

Title : Client/Server computing
Author : Patrick smith, Steve Guengerich
Publisher : Prentice Hall of India
Edition : Second
Year : 2002

Chapters:

Unit – I : 1 (Page 14 – 28), 2
Unit – II : 3,4
Unit – III : 5,6
Unit – IV : 7,8,9
Unit – V : 10, Page :253,263,264,270,298,300

Reference:

Title : The essential Client/Server survival guide
Author : Robert orfali, Dan Harkey, Jeri Edwards
Publisher : Galgotia
Edition : Second
Year : 2005

Title : Client/Server computing
Author : Dewire
Publisher : Tata McGraw Hill
Edition : -----
Year : 1998

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Course	: B.Sc. Computer Science	Code No	:
Class	: II/III	No of Hrs allotted	: 5
Semester	: IV/V		
Title of the Paper	: Computer Organization - Elective	No of credits	: 5
Paper	: Elective - I/II		

Course Objective

This course enables the students to acquire knowledge about computer hardware architecture. It explains the function and design of individual units in a computer and interaction among these components.

Unit-I

Basic Computer Organization:

Instruction codes – Computer Registers – Computer Instructions – Timing and control – Instruction cycle – Memory reference instructions- Design of basic Computer.

Unit –II

CPU

General register organization – Design of arithmetic logic unit – Stack organization – Instruction formats – Addressing modes – Data transfer and manipulation – Program control.

Unit-III

Computer Arithmetic:

Hardware implementation and Algorithm for Addition, Subtraction, Multiplication, Division – Booth multiplication algorithm – Floating point Arithmetic operations – Decimal Arithmetic unit and Operations.

Unit-IV

I/O and Memory Organisation:

Input-output interface – Direct memory access – Input-Output processor – Memory Hierarchy – Main memory – Associative memory – Cache memory – Virtual memory.

Unit-V

Advanced Processing:

RISC, CISC characteristics – Parallel Processing – Pipelining – Arithmetic pipeline – Instruction pipeline – Array processors – Multiprocessors – Interconnection structures.

Text Book:

Title	: Computer System Architecture
Author	: M.Morris Mano
Publisher	: Printice Hall India
Edition	: Third
Year	: Reprint 2003

Chapters:

Unit – I	: 5
Unit – II	: 8.1 to 8.7,4.7
Unit – III	: 10.1 to 10.7
Unit – IV	: 11.2 , 11.6, 11.7, 12.1, 12.2, 12.4 to 12.6
Unit – V	: 8.8, 9.1 to 9.4, 9.7, 13.1, 13.2

Reference:

Title	: Computer organization
Author	: V.Case Hamachar, Ivonko G.Vranesic safwat, G.Zaky
Publisher	: Tata Mc-Graw Hill
Edition	: Third
Year	: 1990

Title	: Computer organization
Author	: Carl Hamacher, zvokno G.Vranesic, Softwat G.Zaky
Publisher	: Tata Mc-Graw Hill
Edition	: 4 th Revised
Year	: 2008

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Course	: B.Sc. Computer Science	Code	: ESSL11
Class	: I Year	No of Hrs allotted	: 5
Semester	: First		
Title of the Paper: C Programming Lab		No of credits	: 2
Paper	: SE1.		

SIMPLE PROGRAMS

1. Program to check the given number is PRIME OR NOT.
2. Program to check the given number is ODD OR EVEN using Conditional Operator.
3. Program to find the FACTORIAL VALUE of a given number.
4. Program to find the SUM OF DIGIT of a given number.
5. Program to find the number of VOWELS in a string using Switch.. Case.
6. Program to Perform various ARITHMATIC OPERATION,using Switch..Case.
7. Program to solve Quadratic equation.
8. Program to calculate TOTAL, AVERAGE, CLASS of a student.
9. Program to calculate EB-BILL AMOUNT of various slap & category of a customer.

ARRAY PROGRAMS

1. Program to perform MATRIX ADDITION/SUBTRACTION.
2. Program to perform MATRIX MULTIPLICATION.
3. Program to ARRANGE N NUMBERS in order.
4. Program to ARRANGE N NAMES in alphabetical order.
5. Program to implement STACK OPERATION.

FUNCTION & ARRAY PROGRAMS

1. Program for INVENTORY SYSTEM
2. Program for STACK OPERATION.
3. Program to perform MATRIX MULTIPLICATION by passing an array to a function.
4. Program to calculate EB-BILL AMOUNT for N customers.
5. Program for converting BINARY TO DECIMAL.
6. Program for converting DECIMAL TO BINARY.
7. Program to calculate FACTORIAL VALUE using recursion.

STRUCTURE PROGRAMS

1. Program to calculate TOTAL, AVERAGE of N students.
2. Program to calculate EB-BILL amount for N customers.
3. Program to do STUDENTS MARK PROCESSING (N Students).

POINTERS

1. Program to calculate TOTAL, AVERAGE of a student assigning structure to pointer.
2. Program to calculate EB-BILL AMOUNT of a consumer by assigning structure to pointer.

FILES:

1. Create a sequential file to store character data and count number of characters and number of vowels (using if statements) in a data file.
3. Create a sequential file to store character data and count number of characters and number of vowels (using Switch case) in a data file.

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Course	: B.Sc. Computer Science	Code	: ESSL21
Class	: I Year	No of Hrs allotted	:3
Semester	: Second		
Title of the Paper	: Visual Basic Programming Lab	No of credits	:2
Paper	: SE II		

1. Write a program to implement date and time functions.
2. Using various controls write a program.
3. Using control arrays write a program (arithmetic calculation.)
4. Create MDI form and implement it with an example.
5. Write a program for menu creation.
6. Using pop-up menu write simple program.
7. Write a program to implement mouse events.
8. Write a program to create sequential/random file using file system controls.
9. Program to design a digital clock.
10. Process student's mark list using data control i.e. using DAO,RDO,control.
11. Library maintenance, Telephone billing, stock inventory etc using DAO reference and RDO reference with ODBC.
12. Write a program to generate Data report
- 13.. Write a program using Flex grid control.
14. Write a program using Input and Message Dialog boxes.

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Course	: B.Sc. Computer Science	Code	: ESSL31
Class	: II Year	No of Hrs allotted	: 5
Semester	: Third		
Title of the Paper:	Data Structure Lab	No of credits	: 2
Paper	: SE III		

1. Two dimensional Sorting

2. String – Using Array
String Operations:
 - a. Finding the Length
 - b. Searching an element
 - c. Searching a string (pattern matching)

3. String – By Linked List
String Operations:
 - a) Finding the Length
 - b) Searching an element
 - c) Searching a string (pattern matching)

4. Stack – using Array
Stack Operations:
 - a. Inserting and deleting an element (PUSH & POP)
 - b. Evaluation of an expression

5. Stack – using Linked List
Stack Operations:
 - a. Inserting and deleting an element (PUSH & POP)
 - b. Evaluation of an expression

6. & 7. Queue – using Array & Linked list.
Queue Operations:
 - a. Inserting and deleting an element
 - b. Implementing circular queue

8. Tree – using Linked List
Tree Operations:
 - a. Searching a Node
 - b. Tree Travelling
 - c. Arranging strings in alphabetical order

9. & 10. Graph Representation by Adjacency List & Adjacency Matrix.

11. Graph Traversal
 - a. Depth first search
 - b. Breadth first search
 - c. Finding shortest path.

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Course	: B.Sc. Computer Science	Code	: ESSL41
Semester	: Forth	No. of Hrs allotted	: 4
Paper	: SE4	No. of Credits	: 2
Class	: II		
Title of the Paper	: Graphic Programming Lab		

1. Generating a line segment - Using vector generation method.
2. Generating a line segment – Using Bresenham’s Algorithm.
3. Generating a circle – Using Bresenham’s Algorithm.
4. Finding intersection points of two line segments.
5. Rotating an Image (2D)
6. Scaling an Image (2D)
7. Translating an Image (2D)
8. Constructing a Polygon
9. Creating and displaying a Segment.
10. Filling a polygon – Using Scan Line Algorithm
11. Clipping a Line Segment
12. Clipping a Polygon
13. Animating an Image
14. Confined an Image to Viewport.

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Course	: B.Sc. Computer Science	Code	: ESSL51
Class	: III Year	No of Hrs allotted	:5
Semester	: Fifth	No of credits	:2
Title of the Paper	: JAVA Programming Lab		
Paper	: SE V		

1. Program to demonstrate Multilevel Inheritance.
2. Program to demonstrate Method Overloading.
3. Program to demonstrate Method Overriding.
4. Dynamic Method dispatch.
5. Program to demonstrate interfaces.
6. Program to demonstrate packages.
7. Program to demonstrate user-defined exception.
8. Program to demonstrate Multi-threading concept.
9. Applet program to demonstrate basic controls i.e. Button, labels, checkbox etc.
10. Program to demonstrate font class.
11. Program to demonstrate Graphics class.
12. Program to demonstrate layout manager.
13. Write an applet program to create Menus.
14. Program to demonstrate animation.
15. Write a Java program to demonstrate events and keyboard events

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Course	: B.Sc. Computer Science	Code	: ESSL52
Class	: III Year	No of Hrs allotted	: 5
Semester	: V		
Title of the Paper:	Web Technology Lab	No of credits	: 2
Paper	: SE VI		

HTML

1. Creation of HTML Document using basic tags.
2. Creation of Menu using ordered and unordered list and other options.
3. Creation of web page using table tags and their attributes.
4. Creation of personal profile web page using form.
5. Creation of college application form using form and frames.
6. Creation of Mark sheet using frame and form.
7. Creation of on-line application forms for any one application.

DHTML

8. Creation of web page using in-line style sheets.
9. Creation of web page using external style sheets.
10. Creation of document using CSS.

Java Script

11. Writing the word equivalent of a check amount using JavaScript.
12. Preparing class average using JavaScript.
13. Creation a program to illustrate mathematical objects in JavaScript.
14. Program to illustrate string objects in JavaScript.
15. Program to illustrate array objects in Java Script.
16. Program to illustrate usage of cookie in Java Script.

VBScript:

17. Program to illustrate various objects in VBScript.
18. Program to demonstrate various loop structure and condition statements in VBScript.

SERVLETS

19. Program to demonstrate GET and Post Requests suing SERVLETS.
20. Program to demonstrate database application in SERVLETS.

JSP , ASP and XML

21. Creation of web page for a bookshop using JSP.
22. Program to demonstrate various objects in ASP.
23. Simple program in XML

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Course	: B.Sc. Computer Science	Code No	:
Class	: III	No of Hrs allotted	:0
Semester	: V	No of credits	:5
Title of the Paper : Computer Security			
Paper	: Self Study Paper		

Unit – I

Security Problems in Computing

Characteristic of Computers in Intrusion – Kinds of Security Breaches – Points of Security Vulnerability – Methods of Defence – Controls – Effectiveness of Controls – Plan of Attack Encryption.

Unit – II

Basic Encryption and Decryption

Mono Alphabetic Ciphers – Polualphabetic Substitution – Transpositions – Fractionated Morse – Stream and Block Cipher – Characteristics of Good Ciphers – Secure Encryption Systems – Public Key System – Single Key System – DTA Encryption Standard (DES) – Revest Seamir Adelman (RSA) Encryption

Unit - III:

Security Involving Programs and Operating Systems

Information Access Problems – Program Development Controls – Operating System Controls in use of Programs Administration Controls – Protection Services for users of Operating System – Protected Objects and Method of Protection – File Protection Mechanism – User Authentication.

Unit – IV

Database and Network Security

Security Requirements for Database – Reliability and Integrity – Sensitive Data – Inference Problem – Multilevel Databases – Network Security Issues – Encryption in Networking – Access Control – User Authentication – Local Area Networks – Multilevel Security of Network.

Unit- V

Communication and System Security

Communication Characteristics – Communication Media – Loss of Integrity – Wire Tapping – Electronic Mail Security – IP Security – Web Security – Intruders, Viruses Worms – Firewalls.

Text Book:

Title : Security in Computing
Author : Charles P.Pleeger
Publisher : Prentice Hall, 1989.
Edition : Third

Title : Cryptography and Network Security, Principles
Author : William Stallings
Publisher : Prentice Hall, 1988.
Edition :

THIAGARAJAR COLLEGE – AUTONOMOUS MADURAI – 625 009.

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Department of Computer Science

Syllabus for M.Sc. Computer Science

Effect from 2011 – 2013 Batch onwards

Semester –I

Code No	Type of Paper	Subject	Contact hours /weeks	Credit	Total No of hrs Alloted	Max. Marks CA	Max. Marks SE	Total
S1PS1	Core 1	C++ and Data Structures	5	5	75	25	75	100
S1PS2	Core 2	Distributed Operating Systems	5	5	75	25	75	100
S1PS3	Core 3	Relational Database Management System	5	5	75	25	75	100
S1PSE1	Elective -I	Elective Paper –I	4	4	60	25	75	100
S1PSE2	Elective -II	Elective Paper –II	4	4	60	25	75	100
S1PSL1	Core 4	C++ and Linux – Lab	4	2	60	40	60	100
S1PSL2	Core 5	RDBMS –Lab	3	2	45	40	60	100
			30	27	450			

Semester –II

S2PS1	Core 6	VB and Dot Net Technology	5	5	75	25	75	100
S2PS2	Core 7	Data Communications and Networks	5	5	75	25	75	100
S2PSE3	Elective -III	Elective Paper –III	4	4	60	25	75	100
S2PS3	Core 8	Advanced Java	5	5	75	25	75	100
S2PSL1	Core 9	VB and VB.Net Programming – Lab	6	2	90	40	60	100
S2PSL2	Core 10	Advanced JAVA Programming- Lab	5	2	75	40	60	100
			30	23	450			

Semester –III

S3PS1	Core 11	Data Mining	5	5	75	25	75	100
S3PS2	Core 12	Web Technologies	5	5	75	25	75	100
S3PS3	Core 13	Software Project Management	5	5	75	25	75	100
S3PSE4	Elective - IV	Elective Paper –IV	4	4	60	25	75	100
S3PSN ME(w)	NME	Web Designing	2	2	30	25	75	100
S3PSL1	Core 14	Open Source Tools –Lab	5	2	75	40	60	100
S3PSL2	Core 15	Web Programming –Lab	4	2	60	40	60	100
			30	25	450			

Semester –IV

S4PS1	Core 16	Computer Graphics and Multimedia	5	5	75	25	75	100
S4PS2	Core 17	Mobile Computing	5	5	75	25	75	100
S4PSE5	Elective –V	Project Work	-	5	-	40	60	100
			10	15	150			

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Department of Computer Science

M.Sc. Computer Science

(2011 – 2013 Batch onwards)

Course Structure – Choice Based Credit System

B) Consolidation of Contact Hours and Credits : PG

Semester	Contact Hrs / Week	Credits
I.	30	27
II.	30	23
III.	30	25
IV.	10	15
Total	----	90

B) Curriculum Credits

Core	67 Credits
Major Elective	21 Credits
NME	02 Credits
Total	90

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Department of Computer Science
Syllabus for M.Sc. Computer Science
Effect from 2011 – 2013 Batch onwards

First Semester

Subjects		Elective
1.	C++ and Data Structures	Elective - I
2.	Distributed Operating Systems	Elective - II
3.	Relational Database Management System	
4.	C++ and Linux – Lab	
5.	RDBMS- Lab	

Second Semester

Subjects		Elective
1.	VB and Dot net technology	Elective - III
2.	Data Communications and Networks	
3.	Advanced JAVA	
4.	VB and VB .Net Programming – Lab	
5.	Advanced JAVA Programming - Lab	

Third Semester

Subjects		Elective
1.	Data Mining	Elective - IV
2.	Web Technologies	Non-Major Elective
3.	Software Project Management	
4.	Open Source Tools – Lab	
5.	Web Programming - Lab	

Fourth Semester

	Subject	Elective
1.	Computer Graphics and Multimedia	Elective V (Major Project) (4 Months Industrial Project)
2.	Mobile Computing	

List of Electives

- 1) Discrete Mathematics
- 2) Digital Systems and Computer Architecture
- 3) Neural Networks and Applications
- 4) AI and Expert System
- 5) Digital Image Processing
- 6) Bio Informatics
- 7) Network Security and Cryptography
- 8) Parallel Processing
- 9) Wireless Application Protocol
- 10) Enterprise Resource Planning
- 11) Distributed Systems
- 12) Grid Computing
- 13) Nano technology
- 14) Soft Computing
- 15) Blue Tooth Technology

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Department of Computer Science

(From 2011-2013 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PS1
Semester	: First	No. of hours allotted:	5 Hrs
Paper	: Core (1)	No. of Credits	: 5
Title of the Paper: C++ and Data Structures			

Course Objectives:

It provides the basic concepts and techniques of Object-Oriented Programming. It trains the students to develop Object-Oriented Programming skills. It also includes Data Structure concepts, different ways of organizing data and performing various operations on those data.

Unit – I:

OOPS

An Overview of Object Oriented Programming – OOPS Principles and Paradigms:
Encapsulation – Polymorphism – Inheritance – Overloading.

C++ Fundamentals

An overview of C++ - Data Types – Variables – Control Structures.

Unit – II:

Classes

Class and Objects – Constructor – Destructor – Function: Friend and Inline Function – Arrays of Object – this Pointer – Pointer to Class – Function Overloading – Polymorphism – Inheritance.

Unit – III:

C++ File and Exception Handling

File Concept – Opening and Closing a File – Text Files – Random Access File – Exception Handling Fundamentals – Catching All Exceptions – Restricting an Exception – Rethrowing an Exception.

Unit – IV:

Data Representation

Introduction – Linear Lists – Formula Based Representation – Linked Representation.

Stacks

The Abstract Data Type – Derived Classes and Inheritance – Formula-Based Representation – Linked Representation.

Queues

The Abstract Data Type – Formula-Based Representation – Linked Representation.

Unit – V:

Hashing

Dictionaries – Linear List Representation – Hash Table Representation.

Binary and Other Trees

- Trees – Binary Trees – Properties of Binary Trees – Representation of Binary Trees
- Common Binary Tree Operations – Binary Tree Traversal – The ADT Binary Tree
- The Class Binary Tree.

Text Books:

1. The Complete Reference C++
- Herbert Schildt (Tata McGraw Hill, Third Edition)
2. Data Structures, Algorithms and Applications in C++
- Sartaj Sahni (McGraw-Hill International Edition)

Chapters:

- | | |
|------------------|-------------------------------------------------------------------------------|
| Unit – I to III: | 11, 12, 13, 14, 15, 16, 17, 19, 21 from Text Book 1
(Relevant Topics Only) |
| Unit – IV: | 3.1 - 3.4, 5.1 - 5.4, 6.1 - 6.3 from Text Book 2 |
| Unit – V: | 7.1, 7.2, 7.4, 8.1 - 8.8 from Text Book 2 |

Reference Books:

1. Object-oriented Programming in C++
- Robert Lafore (SAMS)
2. Fundamentals of Data Structures
- Ellis Horowitz Sartaj Sahni (Computer Science Press)

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Department of Computer Science

(From 2011-2013 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PS2
Semester	: First	No. of hours allotted:	5 Hrs
Paper	: Core (2)	No. of Credits	: 5
Title of the Paper: Distributed Operating Systems			

Course Objectives:

It provides an overview of the Distributed Operating Systems, the various functionalities and resource management techniques. It also provides a brief introduction to Linux.

Unit I:

Fundamentals: What is a Distributed Computer System? – Evolution of Distributed Computing Systems- Distributed Computing Systems Models-Why are Distributed Computing Systems Gaining Popularity?- What is a Distributed Operating System- Issues in Designing a Distributed operating System- Introduction to Distributed Computing Environment(DCE)

Computer Networks: Introduction- Networks Types-LAN Technologies-WAN Technologies-Communication Protocols-Internet Working-ATM Technology.

Unit II:

Message Passing: Introduction-Desirable Features of a Good Message-Passing System-Issues in IPC by Message Passing-Synchronization-Buffering-Multidatagram Messages-Encoding and Decoding of Message Data-Process Addressing-Failure handling-Group Communication-Case Study: 4.3 BSD UNIX IPC Mechanism.

Remote Procedure Calls: Introduction-The RPC Model-Transparency of RPC-Implementing RPC Mechanism-Sub Generation-RPC Messages-Marshaling Arguments and Results-Server Management-Parameter-Passing Semantics-Call Semantics-Communication Protocols for RPCs-Complicated RPCs-Client Server Binding-Exception Handling-Security-Some Special Types of RPCs-RPC in Heterogeneous Environments-Light weight RPC-Optimizations for Better Performance-Case Studies: Sun RPC,DCE,IPC.

Unit III:

Distributed Shared Memory: Introduction-General Architecture of DSM Systems-Design and implementation issues of DSM-Granularity-Structure of Shared Memory Space-Consistency Models-Replacement Strategy-Thrashing-Other Approaches to DSM-Heterogeneous DSM-Advantages DSM.

Synchronization: Introduction-Clock Synchronization-Event Ordering-Mutual Exclusion-Deadlock-Election Algorithms.

Unit IV:

Resource Management: Introduction-Desirable Features of a Good Global Scheduling Algorithm-Task Assignment Approach-Load-Balancing Approach-Load Sharing Approach.

Process Management: Introduction-Process Migration-Threads.

Unit V:

Distributed File System: Introduction-Desirable Features of a Good Distributed File System-File Models –File-Accessing Models-File sharing Semantics-File Caching Schemes-File Replication-Fault Tolerance-Atomic Transactions-Design Principles-Case Study: DCE Distributed File Service.

Naming: Introduction-Desirable Features of a Good Naming System-Fundamental Terminologies and Concepts-Systems-Oriented Names-Object Locating Mechanisms-Human Oriented names-Name Caches-Naming and Security-Case Study: DCE Distributed Directory Service.

Text Book:

Distributed Operating Systems Concepts and Design, Pradeep.K.Sinha, PHI

Reference:

1. Distributed Operating Systems-Andrews S.Tanenbaum, I edition PHI
2. Distributed Operating System and Algorithms and Analysis-Randy chow,Theodore.Johnson,Pearson Education,Inc.-Addision Wesley.

THIAGARAJAR COLLEGE – AUTONOMOUS MADURAI – 625 009.

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Department of Computer Science

(From 2011-2013 Batch onwards)

Course : M.Sc. Computer Science Code No : S1PS3

Semester : First No. of hours allotted: 5 Hrs

Paper : Core (3) No. of Credits : 5

Title of the Paper: Relational Database Management System

Course Objectives:

It provides idea on RDBMS concepts, SQL operations and PL/SQL in Oracle.

Unit - I:

Introduction

Purpose of Database Systems – View of Data – Data Models – Database Languages – Transaction Management – Storage Management – Database Administrator – Database Users – Overall System Structure.

Entity-Relationship Model

Basic Concepts – Design Issues – Mapping Constraints – Keys – E-R Diagram – Weak Entity Set – Extended E-R Features.

Unit - II:

Relational Model

Structure of Relational Databases – Relational Algebra – Tuple Relational Calculus – Domain Relational Calculus – Extended Relational Algebra Operations.

Integrity Constraints Functional Dependencies.

Relational Database Design

Decomposition – Normalization using Functional Dependencies.

Unit - III:

SQL

The Basic Parts of Speech in SQL: Create Table – Select – Logic and Value – Getting Text Information and Changing it – Playing with Numbers – Dates – Grouping Things Together – Joins – Sub Queries – UNION – INTERSECT – MINUS – Changing Data: INSERT – UPDATE – DELETE – Creating, Dropping and Altering Tables and Views – Users – Roles – Privileges – Indexes – Sequences.

Unit - IV:

An Introduction to PL/SQL

Declarations Section – Executable Commands Section – Conditional Logic – Loops – Cursors – Exception Handling Section.

Triggers

Types of Triggers – Trigger Syntax – Combining Trigger Types – Setting Inserted Values – Maintaining Duplicated Data – Customizing Error Conditions – Calling

Procedures within Triggers – Naming Triggers – Enabling and Disabling triggers – Replacing Triggers – Dropping Triggers.

UNIT-V

Procedures, Functions and Packages

Executing Procedures – Procedures Vs. Functions – Procedures Vs. Packages – Creating Procedures – Creating Functions – Creating Packages – Initializing Packages – Compiling Procedures, Functions and Packages – Replacing Procedures, Functions and Packages – Dropping Procedures, Functions and Packages.

Text Books:

1. Database System Concepts
- Abraham Silberschatz, Henry F. Korth, S. Sudarshan (Tata McGraw-Hill)
2. Oracle 8: The Complete Reference
- George Koch, Kevin Loney (McGraw-Hill)

Chapters:

- Unit – I: 1, 2.1 – 2.7 from Text Book 1
Unit – II: 3.1 – 3.5, 6.5, 7.2, 7.3 from Text Book 1
Unit – III: 3,6,7,8,10,11,14,17 from Text Book 2
Unit – IV: 22,23 from Text Book 2
Unit – V: 24 from Text Book 2

Reference Books:

1. An Introduction to Database Systems
- C. J. Date (Addison-Wesley, Seventh Edition)
2. Understanding Oracle
- James T. Perry, Joseph G. Lateer (BPB)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PSL1
Semester	: First	No. of hours allotted:	4 Hrs
Paper	: Core (4)	No. of Credits	: 2
Title of the Paper: C++ and Linux - Lab			

C++

1. Program using Control Statements.
2. Program using Looping Statements.
3. Program with Classes and Objects.
4. Program using Constructor and Destructor.
5. Program using Function Overloading.
6. Program using Operator Overloading.
7. Program using Array of Objects.
8. Program using Passing Objects as Arguments and Returning Objects.
9. Program using Inheritance.
10. Program using Virtual Function and Dynamic Binding.
11. Program using File Handling.
12. Program using Exception Handling.

Data Structures

1. Stack Implementation – Arrays and Linked List.
2. Queue Implementation – Arrays and Linked List.
3. Circular Queue Implementation.
4. Ordered Linked List Implementation through Pointers
(Insert, Delete, Search and Print).
5. Circular Linked List (Insert, Delete, Search and Print).
6. Doubly Linked List (Insert, Delete, Search and Print).
7. Searching Program.
8. Sorting Program.
9. Hashing Techniques.
10. Tree Traversals.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PSL2
Semester	: First	No. of hours allotted:	3 Hrs
Paper	: Core (5)	No. of Credits	: 2

Title of the Paper: RDBMS - Lab

SQL

1. Creating the Database (DDL Commands).
2. Manipulating and Querying the Database (DML Commands).
3. Using Built-in Functions.
4. Processing of Sub Queries.
5. Applying Joins.
6. Sorting the Database.
7. Indexing the Database.
8. Creating and Manipulating Sequences.
9. Creating and Manipulating Views.
10. Creating Users and Roles.

PL/SQL

1. Programs using Control Statements.
2. Programs using Exception Handling.
3. Programs using Implicit Cursors.
4. Programs using Explicit Cursors.
5. Programs using Triggers.
6. Programs using Functions.
7. Programs using Procedures.
8. Programs using Packages.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course : M.Sc. Computer Science Code No : S2PS1

Semester : Second No. of hours allotted: 5 Hrs

Paper : Core (6) No. of Credits : 5

Title of the Paper: VB and Dot Net Technology

Course Objectives:

It provides the Event-driven programming techniques through Visual Basic .It provides an introduction to .NET Framework and deals with programming in VB.NET.

VISUAL BASIC

Unit – I:

The Visual Basic Language

Visual Basic Development Environment: Overview of the Integrated Development Environment – Constants – Variables – Data Types – Type Conversion – Variable Scope – Arrays – Dynamic Arrays – Subroutines – Functions – Strings – Operators – Control Statements – Mathematical Functions – Date and Time Functions – Managing Forms – Menus – Windows Common Dialogs.

Unit – II:

Controls

Text Boxes – Rich Text Boxes – Command Buttons – Check Boxes – Option Buttons – List Boxes – Combo Boxes – Scroll Bars – Sliders – Picture Boxes – Image Controls – Chart Controls – Grid Controls – Timer Control – Month View Controls – Date Time Picker Controls – Tool Bars – Status Bars – Progress Bars – Cool Bars.

Unit – III:

ActiveX Controls and Documents

Creating an ActiveX Control – Designing an ActiveX Control – Adding Controls to an ActiveX Control – Testing an ActiveX Control – Registering an ActiveX Control – Using a Custom ActiveX Control in a Visual Basic Program – Adding a Property to an ActiveX Control – Adding a Method to an ActiveX Control – Adding an Event to an ActiveX Control – Creating an ActiveX Document - Adding Controls to an ActiveX Document – Handling events in an ActiveX document.

Databases

DAO –RDO – ADO – Data-Bound Controls – Visual Data Manager – Data Control – ODBC Source – Remote Data Control – ADO Data Control – Database Control Methods – Working With Database Objects in Code.

Unit – IV:

Introduction to Visual Basic .NET

Creating a Windows Application – Creating Web Application – Creating a Console Application – New in VB .NET – The .NET Framework and the Common Language Runtime – Building VB .NET Applications – The VB IDE.

The VB .NET Language

Constants – Enumerations – Variables – Data Types – Type Conversion – Arrays – Strings – Operators – Control Statements – Procedures – Functions – Properties – Scope – Exception Handling.

Windows Forms

Form Properties – MsgBox – InputBox – Multiple Forms – MDI Applications – Dialog Boxes – Mouse Events – Keyboard Events - Controls

Object-Oriented Programming

Classes – Objects – Structures – Modules – Constructors – Data Members – Methods – Properties – Events – Overloading – Class Libraries – Namespaces – Destructors – Inheritance – Interfaces – Shadowing – Polymorphism.

Unit – V:

Data Access with ADO.NET

Server Explorer – Data Adapters and Datasets – ADO.NET Objects – New Data Connection – Dataset – Data Provider – Data Adapter Controls – MS Jet Database – Relational Databases – Data Views – Data Binding – Binding Controls to Databases.

Handling Databases in Code

OleDbConnection – SqlConnection – OracleConnection – OleDbCommand – SqlCommand – OracleCommand – DataAdapter – DBDataAdapter – OleDbDataAdapter – SqlDataAdapter – DataSet – OleDbDataReader – SqlDataReader – OracleDataReader – DataTable – DataRow – DataColumn – DataRelation – Creating a Dataset in Code – Creating a Data Connection in Code – Creating a Command Object in Code – Creating a Data Adapter in Code – Creating a Data Table in Code – Creating Data Columns in Code – Creating Data Rows in Code – Accessing Individual Data Items – Looping Over All Tables in a Dataset – Writing Datasets to XML – Reading Datasets from XML – Using a Data Reader – Creating a Data Relation Object in Code.

Text Books:

1. Visual Basic 6 Programming Black Book
- Steven Holzner (DreamTech Press)
2. Visual Basic .NET Programming Black Book
- Steven Holzner (DreamTech Press,)

Chapters: VB (Relevant Topics only)

Unit – I: 2, 3, 4, 5, 11 from Text Book 1
Unit – II: 6, 7, 8, 9, 10, 12, 13, 15 from Text Book 1
Unit – III: 20, 24, 25 from Text Book 1
Unit – IV: 2, 6, 7, 8, 9 from Text Book 2
Unit – V: 12, 13, 27 from Text Book 2

Chapters:VB.NET (Relevant Topics Only)

Unit I: 1, 2, 3

Unit II: 4, 5, 6

Unit III: 7, 8, 9

Unit IV: 10, 11, 12

Unit V: 21, 22, 23

Reference Books:

1. Visual Basic 6 from the Ground Up
- Gary Cornell (Mcgraw-Hill)
2. Programming Visual Basic .NET - Jesse Liberty, Dave Grundgeiger
(O'Reilly, Second Edition)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PS2
Semester	: Second	No. of hours allotted:	5 Hrs
Paper	: Core (7)	No. of Credits	: 5

Title of the Paper: Data Communications and Networks

Course Objectives:

It provides the concepts and mechanisms of data communication and networking. It deals with the various layers and security mechanisms.

Unit – I:

Overview of Data Communications and Networking

Introduction: Data Communications – Networks – The Internet – Protocols and Standards.

Network Models: Layered Tasks – Internet Model – OSI Model.

Physical Layer

Digital Transmission: Line Coding.

Analog Transmission: Modulation of Digital Data – Telephone Modems – Modulation of Analog Signals.

Unit – II:

Physical Layer Techniques

Multiplexing: FDM – WDM – TDM.

Transmission Media: Guided Media – Unguided Media: Wireless.

Circuit Switching: Space-Division Switch, Time-Division Switch, TDM Bus, Space- and Time-Division Switch Combinations.

Error Detection and Correction: Types of Errors – Detection – Error Correction.

Unit – III:

Data Link Layer

Data Link Control and Protocols: Flow and Error Control – Stop-and-Wait ARQ – Go-Back-N ARQ – Selective Repeat ARQ – HDLC.

Multiple Access: Random Access – Controlled Access – Channelization.

Local Area Networks – Ethernet: Traditional Ethernet – Fast Ethernet – Gigabit Ethernet.

Connecting LANs: Connecting Devices – Repeaters, Hubs, Bridges, Two-Layer Switch, Router and Three-Layer Switches.

Unit – IV:

Network Layer

Virtual Circuit Switching: Global Addressing, Virtual Circuit Identifier, Three Phases, Data Transfer Phase, Setup Phase, Teardown Phase.

Host-to-Host Delivery: Internetworks – Addressing – Routing.

Routing Protocols: Unicast Routing – Unicast Routing Protocols – Multicast Routing – Multicast Routing Protocols.

Unit – V:

Transport Layer

Process-to-Process Delivery: Process-to-Process Delivery – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP).

Congestion Control and Quality of Service: Data Traffic – Congestion – Congestion Control – Two Examples – Quality of Service.

Security

Cryptography: Introduction – Symmetric-Key Cryptography – Public-Key Cryptography.

Message Security, User Authentication and Key Management: Message Security – Digital Signature – User Authentication – Key Management – Kerberos.

Text Book:

1. Data Communications and Networking
- Behrouz A. Forouzan (Tata McGraw-Hill)

Chapters:

Unit – I:	1, 2, 4.1, 5, Appendix – C
Unit – II:	6, 7, 8.1, 10
Unit – III:	11, 13, 14, 16.1, Appendix – F
Unit – IV:	18.1, 19, 21
Unit – V:	22, 23.1 to 23.5, 29, 30

Reference Book:

1. Computer Networks
- Andrew S. Tanenbaum (PHI)
2. Data communications & Computer Networks Prakash C.Gupta, PHI.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PS3
Semester	: Second	No. of hours allotted:	5 Hrs
Paper	: Core (8)	No. of Credits	: 5

Title of the Paper: Advanced Java

Course Objectives:

It provides the advanced level of object-oriented programming through Core Java. It also deals with Applet, Networking, Beans, Servlets and JDBC.

Unit I:

Java Fundamentals:

Data Types – Variables – Arrays – Operators – Control Statements.

Classes:

Class Fundamentals – Declaring Objects – Assigning Object Reference Variables – Methods – Constructors – The this Keyword – Overloading Methods – Using Objects as Parameters – Returning Objects – Inheritance Basics – Multilevel Hierarchy – Method Overriding.

Unit II:

Packages and Interfaces:

Defining a Package – Accessing a Package – Importing Packages – Defining an Interface – Implementing Interfaces – Applying interfaces.

Multithreaded Programming:

Thread Model – Main Thread – Creating a Thread – Creating Multiple Threads – Thread Priorities – Suspending, Resuming and Stopping Threads.

Unit III:

Applet:

Applet Basics – Applet Architecture – Applet Skeleton – Applet Display Methods – The HTML APPLET Tag.

Introducing the AWT:

AWT Classes – Window Fundamentals – Working with Frame Windows – Creating

a Frame Window in an Applet – Creating a Windowed Program – Working with Graphics – Working with Color – Working with Fonts.

AWT Controls:

Control Fundamentals – Labels – Buttons – Check Boxes – Check Box Group – Choice Controls – Lists – Scroll Bars – Text Field – Text Area – Layout Managers – Menu Bars and Menus – Dialog Boxes – File Dialog.

Unit IV:

Networking:

Networking Basics – Java and the Net – InetAddress – TCP / IP Client Sockets – URL – URL Connection – TCP / IP Server Sockets – A Caching Proxy HTTP Server – Datagrams.

Java Beans:

Java Bean – Advantages – Application Builder Tools – Using the Bean Development Kit (BDK) – JAR Files – Introspection – Developing a Simple Bean using the BDK – Using Bound Properties – Using the BeanInfo Interface – Constrained Properties – Persistence – Customizers – The Java Beans API – Using Bean Builder.

Unit V:

Servlets:

Life Cycle – Using Tomcat – Create and Compile Servlet – Servlet API – Servlet Package – Servlet Parameters – Servlet HTTP Package – HTTP Requests and Responses – Session Tracking.

Database Connectivity – JDBC:

Design of JDBC – Basic JDBC Programming Concepts – Populating a Database – Executing queries – Scrollable and Updatable Result sets.

Text Books:

1. The Complete Reference Java 2
- Herbert Schildt (Tata McGraw-Hill, Fifth Edition)
2. Core Java 2 Volume II – Advanced Features
- Cay S. Horstmann, Gary Cornell (Sun Microsystems Press)

Chapters: (Related Topics only)

Unit I: 3, 4, 5, 6, 7, 8 from Text Book 1
Unit II: 9, 11 from Text Book 1
Unit III: 19, 21, 22 from Text Book 1
Unit IV: 18, 25 from Text Book 1
Unit V: 27 from Text Book 1 & 4 from Text Book 2

Reference Books:

1. Core Java 2 Volume I – Fundamentals
- Cay S. Horstmann, Gary Cornell (Sun Microsystems Press)
2. Database Programming with JDBC and Java
- George Reese (O'Reilly)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PSL1
Semester	: Second	No. of hours allotted:	6 Hrs
Paper	: Core (9)	No. of Credits	: 2

Title of the Paper: VB and VB.NET Programming - Lab

VISUAL BASIC

1. Programs to demonstrate various Controls.
2. Programs to demonstrate Common Dialog Control.
3. Programs to demonstrate Menus.
4. Programs to demonstrate ActiveX Control.
5. Programs to demonstrate Data-Bound Controls.
6. Programs to demonstrate DAO using Code.
7. Programs to demonstrate RDO using Code.
8. Programs to demonstrate ADO using Code.

VB.NET

1. Programs to demonstrate Control Statements.
2. Programs to demonstrate Arrays.
3. Programs to demonstrate Procedures.
4. Programs to demonstrate Controls.
5. Programs to demonstrate Dialog Boxes.
6. Programs to demonstrate Mouse Events.
7. Programs to demonstrate Keyboard Events.
8. Programs to demonstrate Class Concept.
9. Programs to demonstrate Inheritance.
10. Programs to demonstrate Data Access using Data Binding Controls.
11. Programs to demonstrate Data Access with SQL Server using Code.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PSL2
Semester	: Second	No. of hours allotted:	5 Hrs
Paper	: Core (10)	No. of Credits	: 2

Title of the Paper: Advanced Java Programming - Lab

1. Programs to demonstrate Control Statements.
2. Programs to demonstrate Class Concepts.
3. Programs to demonstrate Packages.
4. Programs to demonstrate Interfaces.
5. Programs to demonstrate Multithreaded Programming.
6. Programs to demonstrate Applets.
7. Programs to demonstrate AWT Controls.
8. Programs to demonstrate Networking.
9. Programs to demonstrate Java Beans.
10. Programs to demonstrate JDBC.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PS1
Semester	: Third	No. of hours allotted:	5
Paper	: Core(11)	No. of Credits	: 5

Title of the Paper: Data Mining

Course Objectives:

It provides knowledge of the various data mining functionalities and applications of data mining.

Unit – I:

Data Mining

Data Mining – Data Mining Functionalities – Classification of Data Mining Systems – Major Issues in Data Mining.

Data Warehouse and OLAP Technology For Data Mining

Data Warehouse – A Multidimensional Data Model – Data Warehouse Architecture
– Data Warehouse Implementation – Further Development of Data Cube Technology
– From Data Warehousing to Data Mining.

Unit – II:

Data Preprocessing

Data Cleaning – Data Integration and Transformation – Data Reduction – Discretization and Concept Hierarchy Generation.

Data Mining Primitives, Languages and System Architectures

Data Mining Primitives – A Data Mining Query Language – Designing Graphical User Interfaces Based on Data Mining Query Language – Architectures of Data Mining System.

Unit – III:

Concept Description

Characterization and Comparison: Data Generalization and Summarization Based Characterization – Analytical Characterization: Analysis of Attribute Relevance Mining Class Comparisons: Discriminating between Difference Classes – Mining Descriptive Statistical Measures in Large Databases.

Mining Association Rules In Large Databases

Association Rule Mining – Mining Single – Dimensional Boolean Association Rules from Transactional Databases – Mining Multilevel Association Rules from Transaction Databases – Mining Multidimensional Association Rules from

Unit – IV:

Classification And Prediction

Issues Regarding Classification and Prediction – Classification by Decision Tree Induction – Bayesian Classification – Classification by Back Propagation – Classification Based on Concepts from Association Rule Mining – Other Classification methods – Prediction – Classifier Accuracy.

Unit – V:

Mining Complex Types Of Data

Multidimensional Analysis and Descriptive Mining of Complex Data Objects.

Applications And Trends In Data Mining

Data Mining Applications – Data Mining System Products and Research Prototypes – Additional Themes on Data Mining – Social Impacts of Data Mining – Trends in Data Mining.

Text Book:

1. Data Mining : Concepts and Techniques
- Jiawei Han, Micheline Kamber (Morgan Kaufmann Publishers)

Chapters:

Unit – I:	1.3, 1.4, 1.6, 1.7, 2.1 - 2.6
Unit – II:	3.2 to 3.5, 4.1 to 4.4
Unit – III:	5.2 to 5.5, 6.1 - 6.4
Unit – IV:	7.2 to 7.9
Unit – V:	9.1, 10.1 - 10.5

Reference Book:

1. Data mining: Practical Machine Learning Tools and Techniques
- Ian H. Witten, Eibe Frank (Morgan Kaufmann, Second Edition)
1. Data mining: a knowledge discovery approach-Krzysztof J.Cios, Witold Pedrycz, W.Swiniarski, Lukasz A.Kurgan.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PS2
Semester	: Third	No. of hours allotted:	5 Hrs
Paper	: Core (12)	No. of Credits	: 5
Title of the Paper: Web Technologies			

Course Objectives:

It provides web programming using JavaScript, PHP and ASP.

Unit – I:

Introduction to JavaScript

Fundamentals: Variables – Constants – Program Flow – Expressions – Operators – Functions.

Built-In Classes: Objects – Built-In Classes – Data Types – String Object – Mathematical Functions – Date-Handling Functions – Preparing Text Before Sending to Web Browser – Using Regular Expressions.

Arrays: Creating an Array Object - Setting and Retrieving Values – Multidimensional Arrays.

User-Defined Classes: Classes – Creating Objects.

Unit – II:

JavaScript in Web Designing

Embedding JavaScript in a Web Page: HTML Structure – Adding JavaScript to a Web Page – Loading an External JavaScript File – Calling JavaScript Using Hyperlinks.

Manipulating Web Forms: HTML Forms – Retrieving and Setting Form Control Values.

Handling Browser Events: Event Handlers – Handling Events – Triggering Events.

Communicating Between Browser Frames: HTML Frames – Calling Functions from Other Frames – Synchronization Between Frames.

Simple Animation: Cascading Style Sheets – Basic Animation.

Unit – III:

PHP

A First Script: First Script – Combining HTML and PHP – Adding Comments to PHP Code.

Building Blocks: Variables – Data Types – Operators – Expressions – Constants.

Going with the Flow: Switching Flow – Loops.

Functions – Arrays – Objects – Working with Forms – Working with Dates – Working with Strings.

Database Integration: Connecting to the Database Server – Selecting a Database – Adding Data to a Table – Accessing Information – Changing Data – Getting Information.

Unit – IV:

Introduction to ASP

Working with ASP: Architecture – Development Tools – VBScript.

Interacting with the User: Sending Data to the User – Retrieving Information from the User – Managing User Sessions and Applications – Persisting Information about the user.

Working with Components – Sending and Receiving Email.

Unit – V:

ASP Programming

Data Access: Basics – Retrieving Data from a Database – Inserting Data into a Table – Modifying Table Data – Paging through Recordsets.

Passing Data Using XML: Understanding XML – Displaying XML – Creating XML.

Text Books:

1. JavaScript – A Beginner’s Guide
- Scott Duffy (DreamTech Press)
2. SAMS Teach Yourself PHP4 in 24 Hours
- Matt Zandstra, Brian Schaffner (SAMS)
3. SAMS Teach Yourself Active Server Pages in 24 Hours
- Christoph Wille, Christian Koller (Techmedia)

Chapters:

- Unit – I: 2 – 5 from Text book 1
- Unit – II: 6, 8, 9, 10, 12 from Text book 1
- Unit – III: 3 – 9, 12, 15, 17 from Text book 2
- Unit – IV: 3 – 7, 9, 11 from Text book 3
- Unit – V: 13 – 17, 20 from Text book 3

Reference Books:

1. Web Standards Programmer's Reference: HTML, CSS, JavaScript, Perl, Python & PHP
- Steven M. Schafer (Wiley Dreamtech)
2. ASP Programming for the Absolute Beginner
- John Gosney (Thomson Course Technology)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PS3
Semester	: Third	No. of hours allotted:	5 Hrs
Paper	: Core (13)	No. of Credits	: 5
Title of the Paper: Software Project Management			

Course Objectives:

It provides the study of various phases of software development.

Unit I:

Introduction – Importance of Software Project Management – Project – Software project Vs Other types of Project – Contract Management and Technical Project Management – Activities covered by Software Project Management – Plans, Methods and methodologies – Categorizing Software Projects – Setting Objectives – Stake holders - Business Case –Requirement specification – Management control. Step wise: An overview of Project Planning: Introduction – Ten steps. Programme management and project evaluation: Introduction – Programme management – Managing the allocation of resources within programmes – Strategic Programme management – Creating a programme – Aids to Programme management – Benefits Management – Evaluation of individual projects – Technical Assessment – Cost Benefit Analysis – Cash Flow forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

Unit II:

Selection of an appropriate project approach: Introduction – Choosing technologies – Technical plan contents list – Choice of process models – Structure Vs Speed of delivery – The Waterfall model – The V-Process Model – The Spiral Model – Software prototyping – Other ways of categorizing prototypes – Incremental Delivery- Dynamic Systems Development method – Extreme programming – Managing iterative process – Selecting the most appropriate process model.

Software Cost Estimation: Introduction – Where are estimates done? – Problems with over and under estimates – Basis for software estimating – Software effort estimation techniques – Expert Judgement – Estimating by analogy – Albrecht function point analysis – Function points Mark II - COSMIC Full function points – A Procedure code oriented approach – COCOMO: a Parametric model

Unit III

Activity Planning: An Introduction – Objectives of Activity Planning – When to plan – Project Schedules – Projects & Activities – Sequencing and scheduling activities – Network planning models – Formulating a network model – Adding the time dimension – The forward pass – The backward pass – Identifying the critical path – Activity float – Shortening the project duration – Identifying critical activities – Activity on arrow networks.

Risk Management: Introduction – Risk – Categories of Risk – A framework for dealing with this – Risk Identification – Risk Assessment – Risk Planning – Risk Management – Evaluating risks to the schedule – Applying the PERT Technique – Monte Carlo simulation – Critical chain concepts.

Resource Allocation: Introduction – The Nature of Resource – Identifying resource requirements – Scheduling resources – Creating Critical paths – Counting the cost – Being specific – Publishing the resource schedule – Cost Schedule – The Scheduling Sequence.

Unit IV:

Monitoring and Control: Introduction – Creating the framework – Collecting the data – Visualizing Progress – Cost Monitoring – Earned Value Analysis – Prioritizing monitoring – Getting the project back to target – Change control.

Managing Contracts: Introduction – ISO 12207 approach to the acquisition and supply of software – The supply process – Type of contract – Stages in Contract placement – Typical terms of a contract – Contract Management – Acceptance.

Unit V:

Managing people and Organizing terms: Introduction – Understanding Behavior – Organizational Behavior: a background – Selecting the right person for the job – Instruction in the best methods – Motivation – The Oldham-Hackman job characteristics model – Working in groups – Working in groups – Becoming a team – Decision making – Leadership – Organizational Structures – Dispersed and Virtual team – The influence of culture – Stress – Health & Safety.

Software Quality: Introduction – The place of Software quality in project planning – The importance of software quality – Defining Software quality – ISO 9126 – Practical software Quality Measures – Product Vs Process software quality management – External standards – Techniques to help enhance software quality – Quality Plans.

Text Book:

Software Project Management, Bob Hughes and mike Cotterell, Tata Mc Grawhill
Fourth edition, 2006.

Reference:

1. Software Project Management, A Concise Study, S.A. Kelkar, PHI, 2007.
2. Software Project Management ,Robert Bruce measure for improving performance,
Phi 2006 Kelsey, Ph.D.

THIAGARAJAR COLLEGE – AUTONOMOUS MADURAI – 625 009.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: PG-NME	Annexure No :
Title of the Paper:	Web Designing	Int Marks : 25
Semester	: Third	Ext Marks : 75
Sub. Code	: S3PSNME(W)	Max Marks : 100

Unit – 1

Introduction

Internet – An Introduction: Internet Service Features – Internet Addressing: IP Address – Domain Name – Electronic Mail – Uniform Resource Locator.

WWW

The World Wide Web – Web Page – Net Surfing - Internet / Web Browsers.

Unit – 2

Html Essentials

What is Html – Inside a Web Page – Common HTML Tags and attributes – Writing the first Webpage -Basic Text Formatting – List Tags - Formatting Images – Background Images - What is a Hyperlink – Working with <A> Tag.

Image Maps

Approaches to Image Maps – Coding for Image Map - Table Tags – Table Formatting - Processing forms with Scripts – Form Controls.

Text Book:

1. Internet for Everyone

- Alexis Leon and Mathews Leon UBS Publishers and Distributors Ltd.

2. HTML and XML for Beginners-Michael Morrison-PHI.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PSL1
Semester	: Third	No. of hours allotted:	5 Hrs
Paper	: Core (14)	No. of Credits	: 2
Title of the Paper: Open Source Tools Lab			

1. OPEN SOURCE TOOL -1 : WEKA 3

- To check Preprocessing
- To check Seed ROI Selection and the time series extraction
- To Design PPI Model
- To Implement SEM in Neuroimage.

2. OPEN SOURCE TOOL-2 : IMAGE J

- Analyzing Camera experiments with Image j
- Program to develop a game using image j
- Program to review the windows using image j
- Program to initiate the scripts using image j

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Department of Computer Science

(From 2011-2013Batch onwards)

Course : M.Sc. Computer Science Code No :
S3PSL2
Semester : Third No. of hours allotted: 5 Hrs
Paper : Core (15) No. of Credits : 2
Title of the Paper: Web Programming - Lab

JavaScript

1. Programs to demonstrate Control Statements.
2. Programs to demonstrate Built-In Functions.
3. Programs to demonstrate User-Defined Functions.
4. Programs to demonstrate Class Concepts.
5. Programs to demonstrate Arrays.
6. Programs to embed JavaScript in a Web Page.
7. Programs to manipulate Web Forms.
8. Programs to handle Browser Events.
9. Programs to handle Frames.
10. Programs to perform Animation.

PHP

1. Programs to demonstrate Control Statements.
2. Programs to demonstrate User-Defined Functions.
3. Programs to demonstrate Date Functions.
4. Programs to demonstrate String Functions.
5. Programs to demonstrate Arrays.
6. Programs to demonstrate Objects.
7. Programs to manipulate Forms.
8. Programs to manipulate Database.

ASP

1. Programs to demonstrate on Interacting with Users.
2. Programs to demonstrate User Session Management.
3. Programs to handle Cookies.
4. Programs to handle Objects.
5. Programs to demonstrate on Sending Email.
6. Programs to demonstrate on Receiving Email.
7. Programs to manipulate Database.

8. Programs using XML.

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Department of Computer Science

(From 2008 – 2010 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S4PS1
Semester	: Fourth	No. of hours allotted:	5 Hrs
Paper	: Core(16)	No. of Credits	: 5

Title of the Paper: Computer Graphics and Multimedia

Course Objectives:

It provides an understanding of various computer graphics operations and various multimedia elements.

Unit – I:

Applications of Computer Graphics

Computer-Aided Design, Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interface.

Output Primitives

Points and Lines – Line-Drawing Algorithms – Circle- Generating Algorithms – Filled-Area Primitives: Scan-Line Polygon Fill Algorithm – Boundary-Fill Algorithm – Flood-Fill Algorithm.

Unit – II:

Two-Dimensional Geometric Transformations

Basic Transformations– Matrix Representations – Composite Transformations – Other Transformations: Reflection – Shear.

Two-Dimensional Viewing

The Viewing Pipeline – Window-To-View Port Coordinate Transformation – Clipping Operations – Point Clipping – Line Clipping: Cohen-Sutherland – Liang-Barsky – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

Unit – III:

Three-Dimensional Concepts

Three-Dimensional Display Methods – Three-Dimensional Transformations: Translation – Rotation – Scaling – Reflections – Shears – Composite Transformations – Three-Dimensional Viewing: Parallel Projections – Perspective Projections.

Unit – IV:

Introduction to Multimedia

Multimedia – Growth – Examples – Categories of Multimedia – Delivering Multimedia – Inappropriate Use.

Hardware Components of a Multimedia System

Multimedia Personal Computer – Playback System – Development system.

Unit – V:

Multimedia Elements

Working with text – Accommodating Text-Intensive Titles – Software for Creating and Editing Text – Working with graphics – Software for Creating and Editing Graphics – Features of Graphics Programs – Sources of Graphic Images – Sound – MIDI – Animation – Virtual Reality – Video.

Multimedia Authoring Programs

Authoring Programs – Multimedia Presentations – Stand-Alone Applications – How Authoring Systems Work.

Text Books:

1. Computer Graphics
- Donald Hearn, M. Pauline Baker(1994, PHI)
2. Multimedia in Action
- James E. Shuman(1997, Vikas Publishing House)

Chapters:

Unit – I:	1, 3.1, 3.2, 3.5, 3.11 from Text book 1
Unit – II:	5.1 – 5.4, 6 from Text book 1
Unit – III:	9.1, 11.1 – 11.5, 12.3 from Text book 1
Unit – IV:	1, 2 from Text book 2
Unit – V:	3, 4, 5 from Text book 2

Reference Books:

1. Computer Graphics: A Programming Approach
- Steven Harrington (1983, McGraw-Hill International Edition)
2. Multimedia Technology and Applications
- David Hillman (1998, Galgotia Publications Pvt. Ltd.)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S4PS2
Semester	: Fourth	No. of hours allotted:	5
Paper	: Core(17)	No. of Credits :	5

Title of the Paper: Mobile Computing

Course Objectives:

It Provides Recent Trend in Mobile Computing. It deals with WAP and Packet Radio Services.

Unit I:

Introduction – Mobility of Bits and Bytes -Wireless The beginning – Mobile computing –Dialogue Control – Networks – Middleware and Gateways – Applications and Services – Developing Mobile Computing Applications – Security in Mobile Computing – Standards – why it is necessary – Standard Bodies – Players in the wireless space.

Mobile computing Architecture: History of computers – History of Internet – Internet - The Ubiquitous Network – Architecture for Mobile computing – Three-tier Architecture – Design consideration for mobile computing – mobile computing through Internet - making existing applications mobile enabled

Unit II:

Mobile Computing through Telephony – Evolution of Telephony – Multiple Access Procedures – mobile computing through telephone – Developing an IVR Application – voice XML – Telephony Application Programming Interface.

Emerging Technologies: Introduction – Bluetooth – radio Frequency Identification - wireless broadband – mobile IP – Internet Protocol version 6 – Java card.

Unit III:

Global System for Mobile communication – Global System for Mobile communication – GSM Architecture – GSM entities – call routing in GSM – PLMN Interfaces – GSM address and Identifiers – Network aspects in GSM – GSM Frequency Allocation - Authentication and security.

General Packet Radio Service: Introduction – GPRS and packet Data Network – GPRS Network Architecture – GPRS Network operations – Data Services in GPRS – Application for GPRS – Limitations of GPRS – Billing and charging in GPRS

Unit IV:

Wireless Application Protocol – Introduction – WAP – MMS – GRPS applications. CDMA and 3G:Introduction – Spread spectrum technology – IS95 – CDMA versus GSM – Wireless Data – Third Generation Networks – Application on 3 G

Unit V:

Wireless LAN: Introduction – wireless LAN advantages – IEEE 802.11 standards – wireless LAN architecture – mobility in wireless LAN – deploying wireless LAN – Mobile adhoc Networks and sensor Networks – wireless LAN Security – WiFi versus 3G Internet networks and Internetworking :Introduction – fundamentals of call processing – Intelligence in the networks – SS#7 signaling – IN Conceptual Model – softswitch – programmable networks – technologies and Interfaces for IN 360.

Text Book:

Mobile computing, Technology applications and Service creation,
Asoke K Talukder Roopa R Yavagal, TMH publishing company New Delhi, 2005.

Reference Books:

1. Mobile computing-Tomasz imielinski, Henry F.Korthkluwer Academic Publishers.
2. Mobile Computing-CSR Prabhu, Universities Press,2002.

LIST OF ELECTIVES

- 1) Discrete Mathematics
- 2) Digital Systems and Computer Architecture
- 3) Neural Networks and Applications
- 4) AI and Expert System
- 5) Digital Image Processing
- 6) Bio Informatics
- 7) Network Security and Cryptography
- 8) Parallel Processing
- 9) Wireless Application Protocol
- 10) Enterprise Resource Planning
- 11) Distributed Systems
- 12) Grid Computing
- 13) Nano technology
- 14) Soft Computing

15) Blue Tooth Technology

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PSE1
Semester	: I	No. of hours allotted:	4
Paper	: Elective (1)	No. of Credits	: 4
Title of the Paper: Discrete Mathematics			

Course objective:

To understand the concepts of mathematics which are essential for better understanding as well as development of the computer science subjects and its applications

Unit I: (Set theory, Relations and functions)

Set theory: Introduction – Sets – Notation and Description of Sets – Subsets – Venn-Euler Diagram – Operations on Sets – Basic laws of Algebra.

Relations: Cartesian product – Relations – Representation of a Relation – Operations on Relations – Equivalence Relation.

Functions: Functions and Operators – One-one, onto functions – Special types of functions.

Unit II: (Logic)

Statements and Notations – Connectives – Truth tables – Well formed formula(w.f.f) –

Two state devices – Normal forms – Theory of inference – Predicate calculus – Inference theory of predicate calculus.

Unit III: (Graph theory)

Basic concepts – Matrix representation of Graphs – Trees – Spanning trees.

Unit IV: (Finite Automata and Regular expressions)

Finite state systems(FA & NFA) – Basic Definitions – FA & NFA with ϵ – moves –

Regular expressions – Moore and Mealy machines.

Unit V: (Pumping Lemma and Grammars)

The pumping Lemma for regular sets – Minimization of finite automata – Context-free

Grammars – Derivation Trees – Chomsky Normal form.

Text Books:

1. Discrete Mathematics by Dr. M.K. Venkataraman, Dr. N. Sridharan and N. Chandrasekaran (The National Publishing Company)
2. Discrete Mathematical Structures with applications to Computer Science by J.P. Tremblay and R. Manohar (Tata McGraw-Hill edition-1997)
3. Introduction to Automata theory, Languages and Computation by John. E. Hopcroft, Jeffery d. Ullman (Narosa Publications, 15th Reprint, 1997)

Chapters:

Unit I (From Text Book 1): Chapter 1: 1 to 6,8, Chapter 2: 1 to 5, Chapter 3: 1 to 3

Unit II (From Text Book 2): Chapter 1: 1-1 to 1-6. (Excluding 1-4.4 (automatic theorem proving) and 1-6.5 (Formulas involving more than one quantifier).

Unit III (From Text Book 1): Chapter 11: 1 to 4.

Unit IV (From Text Book 3): Chapter 2: 2.1 to 2.5, 2.7.

Unit V (From Text Book 3): Chapter 3: 3.1, 3.4, Chapter 4: 4.1 to 4.3, 4.5

Reference Books:

1. Discrete Mathematics – Schaum's outline series (econd edition)
2. Graph theory with application to engineering and computer science by Narsingh Deo.
3. Discrete Mathematics by S. Sundaresan, K.S. Ganapathy Subramanian and K. Ganesan.
4. Invitation to Graph theory by S.Arumugam and Ramachandran.

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Department of Computer Science

(From 2011-2013 Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (2)	No. of Credits	: 4

Title of the Paper: Digital Systems and Computer Architecture

Course Objectives:

It provides the design of digital systems. It provides idea about the number systems and logic circuits. It also deals the organization of a computer system.

Unit – I:

Number Systems

Decimal System – Bistable Devices – Counting in the Binary System – Binary Addition and Subtraction – Binary Multiplication and Division – Converting Decimal Numbers to Binary – Negative Numbers – Use of Complements to Represent Negative Numbers – Complements in Other Number Systems – Binary Number Complements – BCD Number Representation – Octal and Hexadecimal Number Systems.

Boolean Algebra and Gate Networks

Fundamental Concepts of Boolean Algebra – Logical Multiplication – AND Gates and OR Gates – Complementation and Inverters – Evaluation of Logical Expression – Evaluation of an Expression Containing Parentheses – Basic Laws of Boolean Algebra – Proof by Perfect Induction – Simplification of Expression – Demorgan’s Theorems – Basic Duality of Boolean Algebra – Derivation of a Boolean Expression – Interconnecting Gates – Sum of Products and Product of Sums – Derivation of Product – of Sums Expression – Derivation of Three Input – Variable Expression – NAND and NOR Gates.

Unit – II:

Logic Design

Flip-Flops – Transfer Circuits – Clocks - Flip-Flop Designs – Gated Flip-Flop – Master Slave Flip-Flop – Shift Register – Binary Counter – BCD Counters – Counter Design – State Diagrams and State Tables.

Arithmetic Logic Unit

Construction of the ALU – Integer Representation – Binary Half-Adder – full-Adder Parallel Binary Adder – Positive and Negative Number – Addition in the 1s and 2s Complement System – Addition and Subtraction in a Parallel Arithmetic Element – Full-Adder Design – Binary Coded Decimal Adder – Positive and Negative BCD Numbers – Addition and Subtraction in the 9’s Complement System – Shift Operation – Basic Operations – Binary Multiplication – Decimal

Multiplication – Division – Logical Operations.

Unit – III:

Basic Structure of Computer Hardware and Software

Fundamental units – Basic Operational Concepts – Bus Structures – Software – Performance - Distributed Computing – Addressing Methods and Machine Program Sequencing: Memory Locations, Addresses and Encoding of Information – Main Memory Operations – Instructions and Instruction Sequencing – Addressing Modes – Assembly Language – Basic Input-Output Operations – Stacks and Queues – Subroutines.

Unit – IV:

The Processing Unit

Some Fundamental Concepts – Execution of a Complete Instruction – Hardwired Control Performance Considerations – Micro Programmed Control.

Input-Output Organization

Accessing I/O Devices – Interrupts Direct Memory Access – I/O Hardware – Standard I/O interfaces.

Unit – V:

The Main Memory

Some Basic Concepts – Semiconductor RAM Memories – ROM Memories – Cache Memories – Performance Considerations – Virtual Memories – Memory Management Requirements.

Computer Peripherals

I/O Devices – Online Storage.

Text Books:

1. Digital Computer Fundamentals
- T.C.Baartee (Tata McGraw Hill Sixth Edition)
2. Computer Organization
- Carl Hamacher, Zvonko G.Vranesic, Sofwat G.Zaky
(Tata McGraw Hill Fourth Edition)

Chapters:

Unit – I: 2.1 – 2.12, 3.1 – 3.17 from Text Book 1
Unit – II: 4.1 – 4.9, 4.12, 4.13, 5.1 – 4.19 from Text Book 1
Unit – III: 1.1 – 1.7, 2.1 – 2.8 from Text Book 2
Unit – IV: 3.1 – 3.5, 4.1 – 4.6 from Text Book 2
Unit – V: 5.1 - 5.3, 5.5 - 5.8, 9.1, 9.2 from Text Book 2

Reference Books:

1. Digital Principles And Applications
- Albert Paul Malvino, Donald P. Leach (Tata McGraw-Hill, Fourth Edition)
2. Computer System Architecture

- M. Morris Mano (PHI)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PSE3
Semester	: II	No. of hours allotted:	4
Paper	: Elective (3)	No. of Credits	: 4

Title of the Paper: Neural Networks and Applications

Course Objectives:

It provides a detailed understanding of neural networks algorithms and applications.

Unit – I:

Introduction

Introduction to Artificial Neural Systems (ANS) – Elementary Neurophysiology – From Neurons to ANS – ANS Simulation – Adaline and Madaline – Adaline and the Adaptive Linear Combiner – Applications of Adaptive Signal Processing – The Madaline – Simulating the Adaline.

Unit – II:

Back Propagation

Back Propagation – The Back Propagation Network – The Generalized Delta Rule – Practical Considerations – BPN Applications – Back Propagation Simulator.

Unit – III:

Associative Memory and Statistical Methods

Introduction – Associative Memory Definitions – The BAM – The Hopfield Memory – Simulating the BAM – Information Theory and Statistical Mechanics – The Boltzmann Machine – The Boltzmann Simulator – Using the Boltzmann Simulator.

Unit – IV:

Counter Propagation Network and SOM

The Counter Propagation Network (CPN) – CPN Building Blocks – CPN Data Processing – An Image Classification Example – The CPN Simulator - Self Organizing Maps (SOM) – SOM Data Processing – Applications of Self Organizing Maps – Simulating the SOM.

Unit – V:

Adaptive Resonance Theory and Neocognitron

Adaptive Resonance Theory and Neocognitron Adaptive Resonance Theory (ART)
– ART Network Description – ART1 – ART2 – The ART1 Simulator – ART2
Simulation – Spatiotemporal Pattern Classification – The Formal Avalanche –
Architectures of Spatiotemporal Networks (STNS) – The Sequential Competitive
Avalanche Field – Applications of STNS – STN Simulation – The Neocognitron –
Neocognitron Architecture - Neocognitron Data Processing – Performance of the
Neocognitron – Addition of Lateral Inhibition and Feedback to the Neocognitron.

Text Book:

1. Neural Networks Algorithms, Applications and Programming Techniques
- James A. Freeman, David M. Skapura (Pearson Education Asia)

Chapters:

Unit – I:	1, 2.2 to 2.5
Unit – II:	3
Unit – III:	4, 5
Unit – IV:	6, 7
Unit – V:	8, 9, 10

Reference Book:

1. Neural Networks: A Comprehensive Foundation
- Simon Haykin (PHI)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PSE4
Semester	: III	No. of hours allotted:	4
Paper	: Elective (4)	No. of Credits	: 4

Title of the Paper: AI and Expert System

Course Objectives:

It provides a detailed knowledge on Artificial Intelligence concepts and procedures. It also gives a basic overview of an Expert System.

Unit – I:

Problems and Search

An Overview of AI – AI Technique – AI Model and the Level of Model – Criteria for Success.

Defining a Problem - Problem Spaces – Problem Systems and Characteristics – Production Systems and Characteristics.

Design of Search Programs – Best First Search – Hill Climbing – Means-Ends Analysis.

Unit – II:

Knowledge Representation

Issues and Approaches to Knowledge Representation – Frame Problem – Representing Simple Facts in Logic.

Procedural Versus Declarative Knowledge – Logic Programming – Forward Versus Backward Reasoning – Depth First Search – Breadth First Search.

Unit – III:

Planning and Understanding

An Overview of Planning – Components of a Planning System – Goal Stack Planning

– Hierarchical Planning.

An Overview of Understanding – Problems in Understanding - Game: Minimax Search Procedure.

Unit – IV:

Natural Language Processing and Learning

Introduction to NLP – Syntactic Processing – Syntactic Analysis - Pragmatic and Semantic Analysis.

An Overview of Learning – Learning in Problem Solving – Rote Learning – Neural Net Learning and Genetic Learning.

Unit – V:

Expert System

An Overview of an Expert System – Representing and Using Domain Knowledge – Expert System Shells – Knowledge Acquisition – Perception.

Text Book:

1. Artificial Intelligence
- Elaine Rich, Kevin Knight (Tata McGraw-Hill)

Chapters: (Relevant Topics only)

1, 2, 3, 4, 5, 12, 13, 14, 15, 17, 20, 21

Reference Book:

1. Principles of Artificial Intelligence and Expert Systems Development
- David W. Rolston (McGraw-Hill)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (5)	No. of Credits	: 4

Title of the Paper: Digital Image Processing

Course Objectives:

It provides in detail about the various digital image processing techniques.

Unit – I:

Digital Image Fundamentals

Introduction – Digital Image Representation – Fundamental Steps in Image Processing – Element of Digital Image Processing Systems – Elements of Visual Perception – A Simple Image Model – Sampling and Quantization – Basic Relationships Between Pixels – Imaging Geometry – Photographic Film.

Unit – II:

Image Transformation And Enhancement

Image Transformations – Fourier Transform – Discrete Fourier Transform – Properties of Two Dimensional Fourier Transform – Fast Fourier Transform Spatial Domain Methods – Frequency Domain Methods – Enhancement by Point Processing – Spatial Filtering – Enhancement in Frequency Domain.

Unit – III:

Image Restoration And Compression

Degradation Model – Algebraic Approach to Restoration – Least Mean Square Filter – Restoration in Spatial Domain – Geometric Transformation.

Fundamentals of Image Compression – Image Compression Models – Error-free Compression – Lossy Compression – Image Compression Standards.

Unit – IV:

Image Segmentation And Representation

Detection of Discontinuities – Edge Linking and Boundary Detection – Thresholding

– Region Oriented Segmentation – Use of Motion in Segmentation – Representation Schemes – Boundary Description – Regional Descriptors.

Unit –V:

Image Recognition And Interpretation

Elements of Image Analysis – Patterns and Pattern Classes – Neural Networks – Structural Methods – Interpretation – Semantic Networks – Production (Expert) Systems.

Text Book:

1. Digital Image Processing
- Rafael C. Gonzalez, Richard E. Woods (Addison–Wesley)

Chapters: (Relevant topics only)

1, 2, 3, 4, 5, 6, 7, 8, 9

Reference Book:

1. Digital Image Processing
- Kenneth R. Castleman (PHI)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (6)	No. of Credits	: 4

Title of the Paper: Bio Informatics

Course Objectives:

It provides an understanding of Bio Informatics concepts and applications. It also includes programming Perl.

Unit – I:

Introduction

Objectives – Kinds of Data – Multiplicity of Data & Redundancy – Databases – Data Integration & Analysis.

Molecular Biology & Bioinformatics

Molecular Biology – Systems Approach in Biology – Central Dogma of Molecular Biology – Definitions – Problems in Molecular & Bioinformatics Approach – Applications.

Unit – II:

Information Molecules & Information Flow

Basic Components – Basic Chemistry of Nucleic Acids – Structure of DNA – Structure of RNA – DNA Replication is Semi-Conservative – Denaturation & Renaturation of DNA – Functional Elements in DNA – Eukaryotic Chromosomes – Structure of Bacterial Chromosome – Analysis DNA – Cloning Methodology – DNA Sequencing & PCR.

Proteins – Profiles & Properties

Amino Acids – Protein Structure – Secondary Structure Elements – Tertiary Structure
– Quaternary Structure – Protein Folding – Protein function – Purification and Characteristics.

Unit – III:

Programming With Perl

Introduction – Programming – Illustrations – Associative Arrays – File Input and Output – Applications for Bioinformatics – Bioperl.

Understanding & Using Biological Databases

Introduction – Types of Databases – Networks and Databases – Introduction to Java Clients – CORBA – Using MYSQL – Introduction to Biostatistics.

Unit – IV:

Alignment Of Pairs Of Sequence

Sequence Analysis of Biological Data – Model & Biological Motivation – Methods of Alignment – Application of Dot Matrices – Methods of Optical Alignments – Using Gap Penalties and Scoring Matrices – Sensitivity and Specificity.

Tools for Sequence Alignment

FASTA – BLAST - Filtering and Gapped Blast – PSI – Blast – Comparison.

Alignment Of Multiple Sequences

Tools for MSA – Considerations – Applications – Viewing MSA.

Unit – V:

Phylogenetic Analysis

Concepts of Trees – Phylogenetic Trees & Multiple Alignments – Distance Matrix Methods – Character Based Methods – Evaluating Phylogenies.

Proteomics

Proteome Analysis – Tools – Metabolic Pathways – Genetic Networks – Network Properties & Analysis – Complete Pathway Simulation: E-Cell.

Text Book:

1. Bioinformatics Concepts, Skills & Applications
- S. C. Rastogi, Namita Mendiratta, Parag Rastogi
(CBS Publishers & Distributors, First Edition)

Chapters:

Unit I:	1, 2
Unit II:	3, 4
Unit III:	6, 7
Unit IV:	8, 9, 10
Unit V:	11, 15

Reference Book:

1. Intelligent Bioinformatics
- Edward Keedwell, Ajit Narayanan (Wiley)

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Department of Computer Science

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Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (7)	No. of Credits	: 4

Title of the Paper: Network Security and Cryptography

Course Objectives:

It provides a detailed understanding of various encryption techniques and web security.

Unit – I:

Overview

Services, Mechanisms and Attacks – The OSI Security Architecture – A Model for Network Security.

Encryption Techniques

Symmetric Cipher Model – Substitution Techniques – Transposition Techniques. Simplified DES – Block Cipher Principles – The Data Encryption Standard – The Strength of DES – Differential and Linear Cryptanalysis – Block Cipher Design Principles – Block Cipher Modes of Operations.

Unit – II:

Public Key Cryptography and RSA

Principles of Public Key Cryptosystem – The RSA Algorithm – Key Management – Diffie – Hellman Key Exchange – Elliptic Curve Arithmetic – Elliptic Curve Cryptography – Message Authentication and Hash Function – Authentication Requirements – Authentication Functions – Message Authentication Codes – Hash Function – Security of Hash Function and MACS.

Unit – III:

Hash Algorithm

MD5 Message Digest Algorithm – Secure Hash Algorithm – RIPEMD-160, HMAC - Digital Signatures and authentication protocols – Digital signature standard – Kerberos – X.509 Authentication Service – Pretty Good Privacy – S/MIME – Data Compression using ZIP – Radix-64 Conversion – PGP Random Number Generation.

Unit – IV:

IP Security and Web Security

IP Security – Architecture – Authentication Header – Encapsulating Security Payload – Combining Security Association – Key Management – Internetworking and Internet Protocols – Web Security Consideration – Secure Sockets Layer and Transport Layer Security – Secure Electronic Transaction.

Unit - V:

System Security

Intruders – Intrusion Detection – Password Management – Malicious Software – Viruses and Related Threats – Virus Counter – Measures – Firewalls – Design Principles – Trusted System.

Text Book:

1. Cryptography and Network Security: Principles and Practices
– William Stallings (Pearson Education, Third Edition)

Chapters:

Unit – I: 1.1 - 1.3, 2.1 - 2.3, 3.1 - 3.7
Unit – II: 9.1, 9.2, 10.1 - 10.4, 11.1 - 11.5
Unit – III: 12.1 - 12.4, 13.1 - 13.3, 14.1, 14.2, 15.1, 15.2,
Appendix-15A, 15B, 15C
Unit – IV: 16.1 - 16.6, Appendix 16A, 17.1 - 17.3
Unit – V: 18.1 - 18.3, 19.1, 19.2, 20.1, 20.2

Reference Book:

1. Cryptography Demystified
- John E. Hershey (McGraw-Hill)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (8)	No. of Credits	: 4

Title of the Paper: Parallel Processing

Course Objectives:

It provides a detailed understanding of the parallel computer architecture, processor and memory hierarchy.

Unit – I:

Parallel Computer Models

Multiprocessors and Multicomputers – Multivector and SIMD Computers – PRAM and VLSI Models.

Program and Network Properties

Program Flow Mechanisms – System Inter Connect Architectures.

Principles of Scalable Performance

Parallel Processing Application – Speedup Performance Laws.

Unit – II:

Processors and Memory Hierarchy

Advanced Processor Technology – Super Scalar and Vector Processors – Memory Hierarchy Technology – Virtual Memory Technology

Bus, Cache and Shared memory

Back Plane Bus Systems – Cache Memory Organizations – Shared Memory Organizations.

Unit – III:

Pipelining and Super scalar Techniques

Linear Pipeline Processors – Nonlinear Pipeline Processors – Instruction Pipeline Design – Arithmetic Pipeline Design – Super Scalar and Super Pipeline Design.

Unit – IV:

Parallel and Scalable Architecture

Multiprocessor System Interconnects – Cache Coherence – Message Passing Mechanisms.

Multivector and SIMD Computer:

Vector Processing Principles – Multivector Multiprocessors – Compound Vector Processing – SIMD Computer Organization.

Unit – V:

Scalable, Multithreaded and Data flow Architecture:

Latency Hiding Technique -Principles of Multithreading – Fine Grain Multicomputers.

Text Book:

1. Advanced Computer Architecture Parallelism, Scalability, Programmability
- Kai Hwang (Tata McGraw-Hill)

Chapters:

Unit I :	1.2 - 1.4, 2.3, 2.4, 3.2, 3.3
Unit II :	4.1 - 4.4, 5.1 - 5.3
Unit III :	6
Unit IV :	7.1, 7.2.1 - 7.2.3, 7.4
Unit V :	9.1 - 9.3

Reference Book:

1. Parallel Processing: Principles and Practice
- E. V. Krishnamurthy (Addison-Wesley)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course : M.Sc. Computer Science Code No :
Semester : No. of hours allotted: 4
Paper : Elective (9) No. of Credits : 4
Title of the Paper: Wireless Application Protocol

Course Objectives:

It provides knowledge on WAP Architecture and gateways. It also deals with WML

Unit – I:

WAP and the Wireless World

WAP Application Architecture – WAP Client – WAP Proxy – WAP Gateway –
WAP Server – WAP Application Server – WAP Internal Structure – Protocols –
Layers – WAP Protocol Stack – Wireless Application Environment (WAE) –
Wireless Session Layer – Wireless Transaction Layer – Wireless Transport Layer
Security – Wireless Datagram Protocol – WAP Versus the Web – WAP 1.2 – WTA
and Push Features – Available Software Products – WAP Browsers – WAP
Gateways – WAP Application Servers – WAP Resources – Development Toolkits.

Unit – II:

WAP Gateways

Functionality of a WAP Gateway – Web Model Vs the WAP Model – Positioning
of a WAP Gateway in the Network – Selecting a WAP Gateway – Basic WML –
XML – WML Structure – A Basic WML Card –Text Formatting – Navigation –
Anchor Links – Advanced Display features – Tables – Images.

Unit – III:

Interacting with the user

Making a Selection – Options Menu – Templates – Do element – Select element –
Events – Variables – Input and Parameter Passing – Lexical Structure – Variables
and Literals – Operators – Automatic Data Type Conversion – Control Constructs –
Functions – Using the Standard Libraries – Pragmas – Dealing with Errors.

Unit – IV:

Usability

Limitations of Wireless Devices – WML Interoperability Issues – Typical Users –
Application goals – How to achieve the goals – ASP – Creating dynamic pages –
object model – Cookies – ADO – using XML to define data – XML Document
Structure – Data Definitions for XML Documents – Processing XML documents.

Unit – V:

WAP Security

Need for WAP Security – Encryption Technologies – Comparing Security Models – Wireless Security Issues – TLS – WTLS – Internet Push model – Push Framework – Problems with Push Technologies – WTA – Fundamentals of the WTA Architecture – WTA User Agent – Server – Security – WTAI – WTA State Model – WTA Applications Scenarios.

Text Book:

1. Professional WAP with WML, WMLScript, ASP, JSP, XML, XSLT, WTA, Push and Voice XML- Charles Arehart, Nirmal Chidambaram, Shashikiran Guruprasad, Alex Homer (Shroff Publishers and Distributors Pvt Ltd.)

Chapters:

Unit – I: 1, 2
Unit – II: 3, 4
Unit – III: 5, 6
Unit – IV: 7, 8, 9 (Relevant Topics Only)
Unit – V: 15, 16, 17

Reference Book:

1. WAP: A Beginner's Guide
- Stephen Lee, Dale Bulbrook (McGraw-Hill)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course : M.Sc. Computer Science Code No : S2PSE(E)
Semester : No. of hours allotted: 4
Paper : Elective (10) No. of Credits : 4
Title of the Paper: Enterprise Resource Planning

Course Objectives:

It provides an overview of ERP, Business Modules, Implementation and ERP market.

Unit – I:

Introduction

ERP-An Overview – Enterprise-An Overview – Benefits of ERP – ERP and Related Technologies – Business Process Reengineering(BPR) – Data Warehousing – Data Mining – On-line Analytical Processing(OLAP) – Supply Chain Management.

Unit – II:

Business Modules

Business Modules in an ERP Package – Finance – Manufacturing (Production) – Human Resources – Plant Maintenance – Materials Management – Quality Management – Sales and Distribution.

Unit – III:

ERP Implementation

To be or not to be – ERP Implementation Lifecycle – Implementation Methodology – Not all Packages are Created Equal – ERP Implementation – The Hidden Costs – Organizing the Implementation – Vendors – Consultants and Users – Contracts with Vendors – Consultants and Employees – Project Management and Monitoring – After ERP Implementation.

Unit IV:

The ERP Market

ERP Market Places SAP R/3 Descriptions architecture – Open Technology – User Interface – SAP AG – People Soft – Baan Company – JD Edwards World Solutions Company – Oracle Corporation – QAD – System Software Associates – Inc.(SSA).

Unit V:

ERP – Present and Future

Turbo Charge the ERP System – Enterprise Integration Applications (EIA) – ERP and E-Commerce – ERP and Internet – Future Directions in ERP.

Text Book:

1. Enterprise Resource Planning
- S. Sadagopan (Tata McGraw-Hill)

Reference Book:

1. Enterprise Resource Planning
- Mary Sumner (PHI)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (11)	No. of Credits	: 4

Title of the Paper: Distributed Systems

Course Objectives:

It provides knowledge of Distributed Systems principles, communications, processes and security. It also deals with distributed object-based system, file system and document-based systems.

Unit – I:

Introduction

Definition of a Distributed System – Goals – Hardware Concepts – Software Concepts – The Client-Server Model.

Communication

Layered Protocols – Remote Procedure Call – Remote Object Invocation – Message-Oriented Communication.

Unit – II:

Processes

Threads – Clients – Servers – Code Migration – Software Agents.

Naming

Naming Entities – Locating Mobile Entities – Removing Unreferenced Entities.

Unit – III:

Consistency and Replication

Introduction – Data-Centric Consistency Models – Client-Centric Consistency Models – Distribution Protocols – Consistency Protocols.

Fault tolerance

Introduction to fault Tolerance – Process Resilience – Reliable Client-Server Communication – Reliable Group Communication – Distributed Commit – Recovery.

Unit – IV:

Security

Introduction to Security – Secure Channels – Access Control – Security Management.

Distributed Object-Based Systems

CORBA – Distributed COM.

Unit – V:

Distributed File Systems

Sun Network File System – The CODA File System.

Distributed Document-Based Systems

The World Wide Web – Lotus Notes.

Text Book:

1. Distributed Systems Principles and Paradigms
- Andrew S. Tanenbaum, Maarten Van Steen (PHI)

Chapters:

Unit – I:	1.1 - 1.5, 2.1 - 2.4
Unit – II:	3.1 - 3.5, 4.1 - 4.3
Unit – III:	6.1 - 6.5, 7.1 - 7.6
Unit – IV:	8.1 - 8.4, 9.1, 9.2
Unit – V:	10.1, 10.2, 11.1, 11.2

Reference Book:

1. Distributed Systems: Concept and Design
- George F. Coulouris, Jean Dollimore, Tim Kindberg (Addison Wesley)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (12)	No. of Credits	: 4

Title of the Paper: Grid Computing

Course Objectives:

It provides an overview of GRID Computing and its Applications. It deals with the technologies and tool kits of Grid Computing

Unit-I: GRID COMPUTING

Introduction - Definition - Scope of grid computing

Unit-II: GRID COMPUTING INITIATIVES

Grid Computing Organizations and their roles – Grid Computing analog – Grid Computing road map.

Unit-III :GRID COMPUTING APPLICATIONS

Merging the Grid sources – Architecture with the Web Devices Architecture.

Unit-IV: TECHNOLOGIES

OGSA – Sample use cases – OGSA platform components – OGSI – OGSA Basic Services.

Unit-V: GRID COMPUTING TOOL KITS

Globus Toolkit – Architecture- Programming model- High level services – OGSI-Net middleware Solutions.

TEXT BOOK

Joshy Joseph and Craig Fellenstein, Grid Computing, PHI, PTR-2003

REFERENCES

1. Ahmar Abbas, Grid Computing: A Practical Guide to technology and Applications, Charles River media , 2003.
2. Daniel Minoli, A Networking Approach to Grid Computing, Wiley-Inter science, 2004.
3. Mark Baker and Rajkumar Buyya, Cluster Computing at a Glance, High Performance Cluster Computing: Architectures and Systems (Vol. 1), Prentice

Hall, NJ, USA, 1999.

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Department of Computer Science

(From 2011-2013 Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (13)	No. of Credits	: 4
Title of the Paper: Nano technology			

Course Objectives:

It provides knowledge of Nano Technology principles, communications, processes and security. It also deals with Quantum Quantization and DNA Quantization and Nano characterization.

Unit –I :OVERVIEW

Overview of current research in nano-scale electronics and devices, Semiconductor and Device 1 (Materials and building blocks), Semiconductor and Device 2 (Photonic Device and Materials), CMOS Device, Limit of CMOS technology - Scaling Theory.

Unit –II :QUANTUM MECHANICS

Nano Physics - Quantum Mechanics, Quantum Device 1 - Length Scales / Transport,
Quantum Device 2 - Ballistic Electron Transport, Coulomb Blockade, RTD, Electron-Wave Coupling Devices.

Unit –III:ORGANIC CHEMISTRY

Fundamental of chemistry, Organic Chemistry, Molecular Electronics I (Molecular Semiconductors and Metals), Molecular Electronics II (Logic Gates), Carbon Nano tube and its application, Spintronics I, Spintronics II.

Unit-IV:QUANTUM COMPUTATION

Quantum Computation I, Quantum Computation II, DNA Computation, Nano-Fabrication 1, Photolithography, Nano-Fabrication 2, E-beam lithography, Advanced Nano-lithography.

Unit-V:NANO CHARACTERIZATION

Nano-Fabrication 3, Thin Film Technology, MBE, CVD, PECVD, LB and Self Assembly, Spun-Coating, Nano-Characterization 1 - Scanning Probe Microscopy - Electron Microscopy (TEM, SEM), Nano-Characterization 2, Photon Spectroscopy, Electron Spectroscopy, Nanomanipulator.

TEXT BOOK:

1. Rainer Waser, Nanoelectronics and Information Technology: Advanced Electronic Materials and Novel Devices, Published by Wiley-VCH, April 2003.

REFERENCE BOOKS:

1. Sandeep Shukla, Iris Bahar, Nano, Quantum and Molecular Computing, Kluwer Academic Publishers, 2004.
2. Poole Jr, C.P., Owens, F.J., Introduction to Nanotechnology, Wiley, 2003.

3. Drexler, K.E., Nanosystems, Wiley, 1992.

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	4
Paper	: Elective (14)	No. of Credits	: 4
Title of the Paper: Soft Computing			

Course Objectives:

It provides knowledge of Soft Computing on Genetic Algorithms, Neural Networks and Fuzzy Logic along with its models.

UNIT I : INTRODUCTION TO SOFT COMPUTING AND NEURAL NETWORKS

Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics

UNIT II : GENETIC ALGORITHMS

Introduction to Genetic Algorithms (GA) – Applications of GA in Machine Learning - Machine Learning Approach to Knowledge Acquisition.

UNIT III: NEURAL NETWORKS

Machine Learning Using Neural Network, Adaptive Networks – Feed forward Networks – Supervised Learning Neural Networks – Radial Basis Function Networks - Reinforcement Learning – Unsupervised Learning Neural Networks – Adaptive Resonance architectures – Advances in Neural networks.

UNIT IV : FUZZY LOGIC

Fuzzy Sets – Operations on Fuzzy Sets – Fuzzy Relations – Membership Functions- Fuzzy Rules and Fuzzy Reasoning – Fuzzy Inference Systems – Fuzzy Expert Systems – Fuzzy Decision Making.

UNIT V : NEURO-FUZZY MODELING

Adaptive Neuro-Fuzzy Inference Systems – Coactive Neuro-Fuzzy Modeling – Classification and Regression Trees – Data Clustering Algorithms – Rulebase Structure Identification – Neuro-Fuzzy Control – Case studies.

TEXT BOOKS:

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, "Neuro-Fuzzy and Soft Computing", Prentice-Hall of India, 2003.
2. George J. Klir and Bo Yuan, "Fuzzy Sets and Fuzzy Logic-Theory and Applications", Prentice Hall, 1995.
3. James A. Freeman and David M. Skapura, "Neural Networks Algorithms, Applications, and Programming Techniques", Pearson Edn., 2003.

REFERENCES:

1. Mitchell Melanie, "An Introduction to Genetic Algorithm", Prentice Hall, 1998.
2. David E. Goldberg, "Genetic Algorithms in Search, Optimization and Machine Learning", Addison Wesley, 1997.
3. S. N. Sivanandam, S. Sumathi and S. N. Deepa, "Introduction to Fuzzy Logic using MATLAB", Springer, 2007.
4. S.N.Sivanandam · S.N.Deepa, " Introduction to Genetic Algorithms", Springer, 2007.
5. Jacek M. Zurada, "Introduction to Artificial Neural Systems", PWS Publishers, 1992.

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Department of Computer Science

(From 2008 – 2010 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S4PS2
Semester	: Fourth	No. of hours allotted:	4 Hrs
Paper	: Elective(15)	No. of Credits	: 4

Title of the Paper: Bluetooth Technology

Course Objectives:

It provides an overview of Bluetooth Technology, the various profiles and the security mechanisms.

Unit – I:

Introduction

Origin of Bluetooth – Advantage – Bluetooth Technology – PAN – Topology – Security – Applications – Java and Bluetooth – Jini and Bluetooth.

Basic Concepts

Serial Vs Parallel Transmission – Asynchronous Vs Synchronous – Spread Spectrum – Circuit and Packet Switching – TDD – Physical Links – Bluetooth Packets.

Unit – II:

Bluetooth Protocol Architecture

Bluetooth Protocol Stack – Core Protocols – Cable Replacement Protocols– Adopted Protocols – Usage Models and Profiles.

Bluetooth General Profile

Generic Access Profile – Serial Port Profile – Service Discovery Application Profile – GOEP.

Unit – III:

Bluetooth Profiles for Usage Model

Cordless Telephony Profile – Dialup Networking Profile – Fax Profile – LAN Access Profile – File Transfer Profile – Object Push Profile – Synchronization Profile.

Unit – IV:

Bluetooth Security

Security Modes – Link Level Security – Flexible Access – Implementation – Architecture Overview – Security Level of Services – Connection Setup – Connectionless L2CAP – Interface to Other Multiplexing Protocols – Interface to

ESCE – Interface to HCI / LINK Manager.

Unit – V:

Bluetooth in the Global Scheme of 3G Wireless

The IMT-2000 Vision – Spanning the Generations – Current 2G Networks-Global
3G Initiative – Role of Bluetooth.

Text Book:

1. Bluetooth Demystified

- Nathan J. Muller (2000, Tata McGraw-Hill, 2001 Edition)

Chapters:

Unit I:	1,2
Unit II:	3,6
Unit III:	7
Unit IV:	8
Unit V:	9

Reference Book:

Getting Started With Bluetooth

- Madhushree Ganguli (2002, Thomson Course Technology)

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Department of Computer Science

(From 2011-2013Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted:	
Paper	: Self-Study	No. of Credits	:

Title of the Paper: E-Commerce Applications

Course Objectives:

It provides an insight into Electronic Commerce business models, architectural frameworks, applications and security.

Unit – I:

Introduction To Electronic Commerce

What is Electronic Commerce? – Benefits of Electronic Commerce – Impact of Electronic Commerce – Classification of Electronic Commerce – Application of Electronic Commerce Technologies.

Case: HLL RS Net: E-Commerce in the Distribution System.

Electronic Commerce: Business Models

What is a Business Model.

Electronic Commerce: Architectural Framework

Framework of Electronic Commerce.

Unit – II:

Electronic Commerce: Information Publishing Technology

Information Publishing – Web Browsers – Hypertext Markup Language – Common Gateway Interface – Multimedia Content – Other Multimedia Objects – Virtual Reality Modeling Language (VRML).

Electronic Commerce: Securing The Business On Internet

Why information on Internet is Vulnerable? – Security Policy, Procedures and Practices – Site Security – Protecting the Network – Firewalls – Securing the Web (HTTP) Service.

Unit – III:

Electronic Commerce: Securing Network Transaction

Transaction Security – Cryptology – Cryptographic Algorithms – Public Key Algorithms – Authentication Protocols – Digital Signatures – Electronic Mail Security – Security Protocols for Web Commerce

Case: Deployment of Information Security Infrastructure: Experience of IIM Lucknow.

Electronic Commerce: Search Engines And Directory Services

Information Directories – Search Engines.

Unit – IV:

Internet Advertising:

Internet Advertising – Emergence of the Internet as a Competitive Advertising Media – Models of Internet Advertising – Banner Advertisements – Sponsoring Content – Screensavers and Push Broadcasting – Corporate Web Site – Interstitials – Superstitials – Opt-In's – Weakness in Internet Advertising.

Agents In Electronic Commerce

Need for Agents – Types of Agents – Agent Technologies – Agent Standards and Protocols – Agent Applications – Future.

Case: E-Commerce Strategy in Business Models and Internet Start-ups: A Business

Case Study on Fabmart Private Limited.

Unit – V:

Perl & CGI

Perl : Data types – Statements – I/O – Built-In Functions – Regular Expression – Subroutines – Object-Oriented Programming – Files.

CGI : Programming with PERL.

Text Books:

1. Electronic Commerce: Framework, Technologies and Applications
- Bharat Bhasker (Tata McGraw-Hill)
2. PERL 5 by Example
- David Medinets (PHI)

Chapters:

Unit – I:	1, 2, 3 from Text Book 1
Unit – II:	6, 7 from Text Book 1
Unit – III:	8, 10 from Text Book 1
Unit – IV:	11, 12 from Text Book 1
Unit – V:	1 - 12 from Text Book 2

Reference Books:

1. Frontiers of Electronic Commerce
- Ravi Kalakota, Andrew B. Whinston (Addison–Wesley)

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Department of Computer Science

Syllabus for PGDCA

Effect from 2011 – 2012 Batch onwards

Code No	Type of Paper	Subject	Contact hours	Max. Marks CA	Max. Marks SE	Total	Credit Points
Semester -I							
S1DS1	Core-1	Principles of Information Technology	4	25	75	100	4
S1DS2	Core-2	Programming in C	4	25	75	100	4
S1DS3	Core-3	Visual Programming	4	25	75	100	4
S1DS4	Core-4	Office Automation Packages	4	25	75	100	4
S1DSL1	Core-5	Visual Basic Programming -Lab	5	40	60	100	3
S1DSL2	Core-6	Programming in C- Lab	5	40	60	100	3
S1DSL3	Core-7	MS-OFFICE -Lab	4	40	60	100	2
Semester -II							
S2DS1	Core-8	OOPS with Java	4	25	75	100	4
S2DS2	Core-9	Oracle Programming	4	25	75	100	4
S2DS3	Core-10	Internet Technologies	4	25	75	100	4
S2DSL1	Core-11	Java Programming -Lab	5	40	60	100	3
S2DSL2	Core-12	Oracle Programming- Lab	5	40	60	100	3
S2DSL3	Core-13	Web Design with HTML - Lab	4	40	60	100	2
S2DSL4	Core-14	Desk Top Publishing -Lab	4	40	60	100	2

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(From 2011 – 2012 batch onwards) for PGDCA Computer Science

Effect from 2011 – 2012 batch onwards

First Semester

Theory

Lab

1. Principles of Information Technology

1. Visual Basic Programming

2. Programming in C

2. Programming in C

3. Visual Programming

3. MS-OFFICE

4. Office Automation Packages

Second Semester

Theory

Lab

1. OOPS with Java

1. Java Programming

2. Oracle Programming

2. Oracle Programming

3. Internet Technologies

3. Web Design with HTML

4. Desk Top Publishing

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(From 2011 – 2012 batch onwards)

Course	: PGDCA	Annexure No :
Title of the Paper:	Principles of Information Technology	Int Marks : 25
Semester	: First	Ext Marks : 75
Sub. Code	: S1DS1	Max Marks : 100
		Hrs.: 4 Credits : 4

Unit I:

Introduction to Computers:

Types of Computers – Characteristics of Computers – What Computers can do and Can't do.

Classification of Digital Computer Systems:

Micro Computers – Mini Computers – Main Frames – Super Computers – Network computers

Anatomy of a Digital Computer:

Functions and Components of a Computer – Central Processing Unit – Memory – How CPU and memory works.

Unit II:

Memory units:

RAM, ROM, PROM, EPROM, EEPROM, Flash Memory.

Auxillary Storage Devices:

Magnetic Tape, Magnetic Disks, CD-ROM, Magnetic and Optical Devices.

Unit III:

Input Devices:

Keyboard, Mouse, Scanners, Digital Camera, MICR, OMR, Barcode Reader, Speech Input devices, Touch Screen, Touch Pad, Light Pen.

Output Devices:

Classification of monitors – Characteristics of a monitor – Video Standards – Printer – Plotter – Sound cards and Speakers.

Unit IV:

Introduction to Computer Software:

Operating Systems – Utilities – Compilers and Interpreters – Word Processors – Spread Sheets – Presentation Graphics – Database management System – Image Processors Programming Languages Machine, Assembly, High Level Languages – Compilers and Interpreters – the Compilation process.

Computer Networks:

Overview – Communication Processors – Modem, Frontend Processors- Communication Media – Tele Communication Software – Types of Networks – Network Topologies – network protocols – Network Architecture.

Unit V:

Introduction to Multimedia:

Introduction – Applications in Education and Software Training – Multimedia on the Web – Multimedia in Office Work – Multimedia Server and Databases

Multimedia Tools:

Paint and Draw Applications – Graphic Effects and Techniques – Sound and music – Authoring Tools – Types of Presentations.

Electronic Commerce:

Business To Business – Ecommerce – Virtual Shop – Digital Middleman.

Text Book: Fundamentals of Information Technology – Alexis Leon & Mathews Leon

Chapters:

Unit I : 1 to 3

Unit II : 6,7

Unit III: 8,9

Unit IV: 10,12,18

Unit V : 24,25,27

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Department of Computer Science

(From 2011 – 2012 batch onwards)

Course : PGDCA
Title of the Paper: Programming in C
Semester : First
Sub. Code : S1DS2

Annexure No :
Int Marks : 25
Ext Marks : 75
Max Marks : 100
Hrs.: 4 Credits : 4

Unit – I:

C- Fundamentals and Operators:

Character set – Identifiers keywords – Data types – Constants – Symbolic constants – Variables.

Arithmetic operators – Unary operators – Relational and Logical operators

Assignment operator – Conditional operator.

Unit – II:

Data Input, Output and Control Statements:

Input functions: Scanf(), Getchar(), Gets()

Output functions: Printf(), Puchar(), Puts()

Control Statements: While, Do..While, For, Nested loops, If..Else, Switch, Break, Continue and Goto

Unit – III:

Functions and Arrays:

Defining a function – Accessing a function – Passing arguments to a function – Recursion.

Defining an array – Processing an array – Passing array to a function – Multidimensional array – Array and String.

Unit – IV:

User-Defined Data Types:

Structure: Defining a structure – processing a structure – passing structures to a function.

Union: Defining a Union – Processing a Union.

Enumerated : Defining and processing enumerated data types.

Unit – V:

Files:

Creating, Opening, Processing and Closing a sequential data file

Case Studies :

Payroll, Mark Processing

Text Book:

Programming with C
By Byrons. Gottfried
(Schaum’s Outline Series)
Chapters: 2, 3, 4, 6, 7, 9, 11, 12
(Relevant Topics only)

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(From 2011 – 2012 batch onwards)

Course : PGDCA
Title of the Paper: Visual Programming
Semester : First
Sub. Code : S1DS3

Annexure No :
Int Marks : 25
Ext Marks : 75
Max Marks : 100
Hrs.: 4 Credits : 4

Unit – I

Introduction :

What is VB – Features – VB philosophy

Creating An Application :

Toolbox – Project Explorer – Properties Window – Form Window

Controls :

Text box – Picture box – Label box – Option button – Frame – List box –
Combo box – Command button – Check box.

Unit – II

Controls :

Drive, Directory & File List Controls – Image Control.

Variables :

Declaring Variables – Data types – Scope of a Variable – Constants – Scope of
a Constant – Fixed Size Arrays – MultiDimensional Arrays – Dynamic Arrays –
Preserve Keyword.

Unit – III

Writing Code In VB :

For ... Next Statement – Decision Maker .. If – The Loop – The While Loop –
Select Case End Select.

Additional Controls :

OLE – Common Dialog Control

Unit – IV

MENU :

All about Menus – The Menu System – Menu Conventions – The Menu Editor
Using the Menu Editor – Making the Menu better – Coding the Menu item.

MDI :

Why MDI Forms – Loading MDI forms & Child forms – The Active Form
Property – Unloading MDI forms with Query Unload.

Unit – V

Database :

Creating a Table – The Data Control – The Bound Controls – Coding.

Reports :

Data Report.

Text Book :

Programming with Visual Basic 6.0

- Mohamed Azam
- Vikas Publishing House Pvt. Ltd.

Chapters :(Relevant Topics Only)

Unit I : 1,2

Unit II : 4

Unit III : 5,10

Unit IV : 7,8

Unit V : 11,12,16

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**Department of Computer Science
(From 2011 – 2012 batch onwards)**

Course	: PGDCA	Annexure No :
Title of the Paper:	Office Automation Packages	Int Marks : 25
Semester	: First	Ext Marks : 75
Sub. Code	: S1DS4	Max Marks : 100
		Hrs.: 4 Credits : 4

Unit – I :

Introduction To Windows :

Starting windows – Handling the Mouse – Window controls – Using Menus – Dialog Boxes – Getting Help from Windows – Overview of Windows ME.

Introduction To Office 2000:

Microsoft Office 2000 – Overview of Office 2000 – Launching the Office 2000 applications – Switching between office 2000 Applications – Office 2000 help system – Windows, menus, dialog boxes and toolbars – Menus and Dialog boxes – Dialog box options – Toolbars.

Unit – II :

Introduction To Word Processing :

Basic Features – Full featured word processors.

Word 2000 Basics :

Starting Word 2000 – Menus and Toolbars – Creating, Editing and saving a Word 2000 document – Using Word 2000 help

Working With Text – Further Techniques:

Opening a document – Moving multiple text selections simultaneously – Link Documents.

Unit – III :

Word 2000 – Advanced Topics:

Creating a Table – Working with Graphics – Mail Merging – Previewing and printing a document – Shrink a document to fit into one page.

Excel 2000 :

Introduction to Electronic spreadsheets – Electronic spreadsheets – Spreadsheet packages.

Excel 2000 – Basics :

Starting Excel 2000 – Navigating in a workbook – Create, Name and Save a New workbook – Data Entry – Manual and Automatic – Correcting mistakes – spelling checker, undo and redo changes – Using Excel 2000 help.

Unit – IV :

Formatting The Worksheet:

Workbook file properties – Naming the worksheets – entering labels and adjusting layout – Adding comments and data validation – Adding pictures Changing cell Alignment and wrapping – Formatting cells – Formatting numbers and dates – Adding headers and footers – Previewing and Printing a worksheet.

Formulas , Functions And Graphs:

Naming a Range of cells – Creating and using formulas – Using Excel functions – Creating Graphs and charts.

Unit – V :

Powerpoint 2000 :

Introduction to presentations and presentation software: Presentation Basics – Presentation packages.

Powerpoint 2000 Basics :

Starting PowerPoint 2000 – Menus and Toolbars – Opening and saving an existing presentation – Opening and saving a presentation using Auto content Wizard – Creating a presentation using a design the blank presentation – using PowerPoint 2000 help.

Editing, Formatting and displaying the presentation:

The slide sorter view – Inserting slides from another presentation – Inserting pictures and graphics – setting slide transitions – slide show view – printing slides, notes and handouts.

Text book:

Introduction to computers with MS-Office 2000.

- Alexis Leon & Mathews Leon
Tata McGraw Hill Publishing Company

Chapters:

Unit – I : 4, 5
Unit – II:6, 7, 8
Unit – III:9, 10, 11
Unit – IV: 12, 13
Unit – V: 14, 15, 16.

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(From 2011 – 2012 batch onwards)**

Course	: PGDCA	Annexure No :
Title of the Paper:	Visual Basic Programming	Int Marks : 40
Semester	: First	Ext Marks : 60
Sub. Code	: S1DSL1	Max Marks : 100
		Hrs.: 4 Credits : 4

List of Programs

Intrinsic Controls

1. Programs to demonstrate the usage of textbox and command button
2. Image Animations with Image box and timer
3. Changing the Backcolor of form using Scrollbars
4. Generation of Prime Numbers using Scrollars
5. Program to illustrate the usage of Option button and Checkbox
6. Programs to demonstrate the concepts of drive, directory and file list control.

Extrinsic Controls

7. Programs to implement the concept of common dialog control.
8. Program to design a simple text editor with Rich Text box.

Menus and MDI

9. Programs to understand the concept of Menus in VB.
10. Program to demonstrate MDI Concepts

Database

11. Program to illustrate the Concept of DAO control with MS Access Database

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**Department of Computer Science
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Course	: PGDCA	Annexure No :
Title of the Paper:	Programming in C	Int Marks : 40
Semester	: First	Ext Marks : 60
Sub. Code	: S1DSL2	Max Marks : 100
Hrs.: 4	Credits : 4	

List of Programs

Simple Programs:

1. Checking prime numbers between two limits.
2. Finding biggest number among three numbers.
3. Even/Odd number checking using conditional operator.
4. Finding factorial value using Recursion.
5. Reverse a String using Recursion.
6. Finding a Grade of a student using Ladder-if.
7. Finding sum of a number (in single digit form)
8. Calculating EB bill for a consumer.
9. Finding Total and Average Mark of a student.
10. Inventory Program.

Arrays:

11. Arranging numbers.
12. Ordering strings.
13. Matrix Addition / Subtraction.
14. Matrix Multiplication
15. Calculate EB Bill for different categories of Consumers.

Structure and Function:

16. Calculating EB bill for few consumers.
17. Calculating EB bill passing structure to a function.
18. Preparing mark list by passing address of a structure to a function (call by address)
19. Inventory program.
20. Preparing mark list declaring union as a member to a structure.

Enum:

21. Calculating simple Interest.
22. Finding number of vowels in a string.

Files:

23. Separating and Storing Odd and Even numbers in two separate files.
24. Finding no. of vowels in a sequential data file.
25. Preparing mark list.

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**Department of Computer Science
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Course : PGDCA
Title of the Paper: MS Office
Semester : First
Sub. Code : S1DSL3

Annexure No :
Int Marks : 40
Ext Marks : 60
Max Marks : 100
Hrs.: 4 Credits : 4

List of Programs

MS Word exercise:

1. Creating simple documents.
2. Different heading , font and font size.
3. Paragraph alignment.
4. Creating table.
5. Inserting pictures in documents.
6. Working with graphics in word document.
7. Using macro.
8. Mail merge.

MS Excel exercise:

9. Creating simple worksheets.
10. Using formulas and functions.
11. Manual and Automatic correcting mistakes – spelling checking.
12. Data validation in work sheet.
13. Adding pictures in worksheet.
14. Using Graphs and charts.

MS Powerpoint exercise:

15. Creating simple presentations.
16. Inserting slides from another presentations.
17. Inserting pictures and graphics

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**Department of Computer Science
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Course	: PGDCA	Annexure No :
Title of the Paper:	OOPS with JAVA	Int Marks : 25
Semester	: Second	Ext Marks : 75
Sub. Code	: S2DS1	Max Marks : 100
		Hrs.: 4 Credits : 4

Unit – I:

Fundamentals of Object – Oriented Programming: Introduction- object-oriented Paradigm – Basic concepts of Object-Oriented Programming – Benefits of OOP – Applications of OOP.

Unit – II:

An Overview of JAVA – Data types – Variables – Arrays – Operators: Arithmetic, Bitwise, Relational - Control Statements: Selection, Iteration and Jump.

Unit – III:

Classes – Objects, Methods, Constructors – Parameter Passing – Returning – Nested classes.

Inheritance: Basics – Using super - overriding methods – Using abstract, final classes.

Unit – IV:

Packages – Interfaces – Exception handling – Try, Catch & Throw – Multithreaded Programming – Suspending, Resuming & Stopping threads.

Unit – V:

Applet – Simple Java Applets with Labels, Text fields, Buttons etc. – Event Handling.

Text Books:

1. The Complete Reference – JAVA
Patrick Naughton
Herbert Schildt
Tata McGraw Hill Publication
2. Programming with Java
E. Balagurusamy
Tata McGraw Hill Publication

Chapters:

Unit – I : Chapter 1 from Programming with JAVA
Unit – 2 to 5: The Complete Reference - JAVA
(Relevant Topics only)

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**Department of Computer Science
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Course	: PGDCA	Annexure No :
Title of the Paper:	Oracle Programming	Int Marks : 25
Semester	: Second	Ext Marks : 75
Sub. Code	: S2DS2	Max Marks : 100
		Hrs.: 4 Credits : 4

Unit – I : Basic Concept:

Related Database Management Concepts – Database Structure – Physical database – logical database – Instance – The Program Interface – Object Relational Model for database management – Data Dictionary – Client/Server Architecture – SQL Editor : Menus – Editing the command line – changing and adding line – Adding text to the end of a line– Deleting a line.

Unit – II : SQL:

Oracle and SQL – SQL Language basics – Types of SQL declarations – Datatypes – Expressions and Operators - Table and table Commands: Create – Alter – drop – Delete – Insert – Update - Data Integrity: Types of Integrity - Integrity Constraints – NOT NULL - UNIQUE KEY - PRIMARY KEY - FOREIGN KEY and SELF REFERENTIAL CONSTRAINTS - Set Operators: UNION – INTERSECT - MINUS.

Unit – III : Sequences, Views and Users

Sequences – Creating a Sequence – Deleting – Changing -Views – How views works – Properties and privileges of a view – Creating a view – Advantages and Restriction – Deleting – Replacing a view – Users – Creating a user – Deleting a user – Privileges – System Privileges – Object Privileges- Viewing users and Privileges – Revoking Privileges – Roles – Creating a Role – Granting a Role to a user – Deleting a Role.

Unit – IV : Playing with numbers, text and control statements

Getting text information and changing it – Playing with numbers – Dates – Grouping things together- Joins and Subqueries – Where - Having – Group by Order by - PL/SQL blocks – declaration section – Executable commands section – Conditional logic – loops – goto statements – Exception handling section – Cursors.

Unit – V : Triggers , Procedures and Packages

Triggers – Types of Triggers – Row level Triggers – Statement level-Before and After Triggers – Instead of Triggers – Valid Trigger types – Trigger syntax Combining Trigger types – Setting inserted values – Naming Triggers – Enabling & Disabling triggers – Replacing Triggers – Dropping Triggers. Procedures – Requested system privileges - Executing Procedures – Procedures Vs Functions – Procedures VS Packages – Creating Procedure – Compiling procedure – Functions – Packages – Dropping procedure – Functions and packages.

Text Books:

1. Oracle 8i, Jose A by Ramalho(Relevant topics only)
Chapters : 1,6,7,8,9,11,12,13
2. Oracle 8 The Complete Reference(George Koch and Kevin Lancy)
Chapters : 6,7,8,10,22,23,24

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**Department of Computer Science
(From 2011 – 2012 batch onwards)**

Course	: PGDCA	Annexure No :
Title of the Paper:	Internet Technologies	Int Marks : 25
Semester	: Second	Ext Marks : 75
Sub. Code	: S2DS3	Max Marks : 100
		Hrs.: 4 Credits : 4

Unit – 1

Introduction

Internet – An Introduction : Internet Access / Dial-Up Connection – Internet Service Features. Getting Connected – Internet Addressing : IP Address – Domain Name – Electronic Mail – Uniform Resource Locator.

Unit – 2

WWW

The World Wide Web – Web Page – Net Surfing. Internet / Web Browsing – MS.Internet Explorer – Viewers – Netscape Navigator – LYNX

Unit – 3

Internet Protocols and Email

Internet Protocols – TCP/IP – File Transfer Protocol (FTP) – Hypertext Transfer Protocol (HTTP) – TELNET – GOPHER – WAIS. Electronic Mail – Email Messages – Finding An Email Address – Mailing Lists – Smileys – Advantages & Disadvantages.

Unit – 4

Html Essentials

What is Html – Inside a Web Page – Common HTML Tags and attributes – Writing the first Webpage.

Formatting Text

Organising the Text – Basic Text Formatting – List Tags

Images

Working with Images – Formatting Images – Linking to External Images – Background Images

Hyperlinks

What is a Hyperlink – Working with <A> Tag.

Unit – 5

Image Maps

Basics – Approaches to Image Maps – Coding for Image Map

Tables

Basics – Table Tags – Table Formatting

Forms

Processing forms with Scripts – Form Controls.

Text Book

1. Internet for Everyone

- Alexis Leon and Mathews Leon
UBS Publishers and Distributors Ltd.

2.HTML and XML for Beginners.

- Michael Morrison
PHI

Chapters :

Unit I : 1, 2, 5 from Text Book 1

Unit II : 3,4 from Text Book I

Unit III : 6,8 from Text Book I

Unit IV : 1,2,3,4 from Text Book II

Unit V : 5,6,7 from Text Book II

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**Department of Computer Science
(From 2011 – 2012 batch onwards)**

Course : PGDCA
Title of the Paper: Java Programming
Semester : Second
Sub. Code : S2DSL1

Annexure No :
Int Marks : 40
Ext Marks : 60
Max Marks : 100
Hrs.: 4 Credits : 4

-
1. Program with control statements.
 2. Program with looping statements.
 3. Program with classes and objects.
 4. Program using constructor overloading.
 5. Program using method overloading.
 6. Multithreaded program.
 7. Program using exception handling.
 8. Program using inheritance.
 9. Program using method overriding.
 10. Program using abstract class.
 11. Program using final class.
 12. Program to create a simple applet.
 13. Applet program with GUI components.
 14. Applet program with event handling.

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**Department of Computer Science
(From 2011 – 2012 batch onwards)**

Course : PGDCA
Title of the Paper: Oracle Programming
Semester : Second
Sub. Code : S2DSL2

Annexure No :
Int Marks : 40
Ext Marks : 60
Max Marks : 100
Hrs.: 4 Credits : 4

SQL

1. Intefacing with database systems-SQL-DML command querying the database.
2. Creation of database using Integrity Constraints and making Queries.
3. Learning Build in commands and functions.
4. Simple tests against list of values.
5. Conversion function, Miscellaneous functions & Group functions.
6. Processing of Subqueries.
7. Sorting the database.
8. Creating ,Altering and Dropping of Sequence & Views.

PL/SQL

9. Program using Iterative controls and Sequence Controls.
10. Program using Exception Handling.
11. Program using Implicit cursors and Explicit cursors.
12. Program using procedures and functions.
13. Application development programs like Payroll, Eb bill report generation, student details.
14. Programming with Triggers.
15. Program to design procedures using Packages.

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**Department of Computer Science
(From 2011 – 2012 batch onwards)**

Course : PGDCA
Title of the Paper: Web Design with Html
Semester : Second
Sub. Code : S2DSL3

Annexure No :
Int Marks : 40
Ext Marks : 60
Max Marks : 100
Hrs.: 4 Credits : 4

List of Programs

Simple Html Program

1. Web page Designing with Heading and Font Tags
2. Web page Designing with <HR> and Marquee Tag

Hyper Links

3. Web page Designing to demonstrate the Link between different Documents
4. Web page Designing to demonstrate the Link within the same document
5. Web page Designing with anchor tag with different TARGET values

Tables

6. Design a Bio Data Form with Table
7. Web page Designing to implement the Concepts of Table and List Tags

Forms

8. Design a webpage with Textfields, Radio button and Combo Box
9. Design a webpage with form controls and table

Image Map

10. Create Image Map for the given Image

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**Department of Computer Science
(From 2011 – 2012 batch onwards)**

Course : PGDCA
Title of the Paper: Desktop Publishing
Semester : Second
Sub. Code : S2DSL4
Hrs.: 4 Credits : 4

Annexure No :
Int Marks : 40
Ext Marks : 60
Max Marks : 100

PAGEMAKER:

1. Book Front Page Designing.
2. Wedding Invitation.
3. Advertisement.
4. Calendar Design.
5. Certificate Design.

PHOTOSHOP:

6. Changing Color Modes.
7. Pattern Setting
8. Mirror Image
9. Changing Black /White Image to Color.
10. Stroking Effect.
11. Merge Text and Image.
12. Shadow of an image.
13. 3D & Lighting Effects.
14. Morphing
15. Composite of two Images

CORELDRAW

16. Organizing Objects and Applying Effects.
17. Drawing with line tools.
18. Cutting, Shaping and Reshaping objects
19. Applying Color fills and outline.
20. Working in 3D.

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Department of Computer Science

Course : Diploma in DTP

Title of the Paper : DESKTOP PUBLISHING

Unit I:

WINDOWS AND WORD PROCESSING

Introduction – Introducing windows – Working with files and folders – Getting to know word – Basic text manipulation – Formatting Text – Automatic Features – Graphical features – Tables and Charts.

Unit II:

PAGEMAKER BASICS

PageMaker Environment – Basics of creating a New document – Basics of using Pagemaker text – Basics of using PageMaker Graphics – Applying color to simple Graphics.

Unit III:

PAGEMAKER ESSENTIALS

Managing PageMaker Text – Managing Graphics and Text as Objects – Using Color in a PageMaker Publication – Creating Tables of Contents and Indexes and Creating a Book in PageMaker – Using Pagemaker’s Build Booklet feature.

Unit IV:

PHOTOSHOP

Getting started with Photoshop – Working with Images and Colors – Making selections – Painting and Editing Tools – Layers – Type – Filters.

Unit V:

INTERNET APPLICATION AND WEB PAGE DESIGN

- a) Introduction to Internet: Internet – An Introduction – Getting connected – The World Wide Web – Internet / Web Browsing – Electronic Mail.
- b) Build Web Pages: Navigate in Front Page – Build a New Page – add graphics, sound and modify your web page with editing tools – format the page – work with tables.
- c) Build Web Site: Build an initial web site – Build hyperlinks and shared borders – collect data with forms – Build a frame page.

Text Books:

Unit I:

Comdex Desktop Publishing Course Kit Vikas Gupta,
Dream Tech Press Edition 2003 (pp 17 to 95)
Word 2000 in Easy steps Scott Basham, Dream Tech Press
(Chapters 1,2,3,7,9,&10)

Unit II:

PageMaker 7 – The Ultimate Reference Carolyn M.Connaly
Dream Tech Press (Chapters 2,3,4,5 & 6)

Unit III:

PageMaker 7 – The Ultimate Reference (Chapters 9,10,11,16,17 &18)

Unit IV:

Comdex Desktop Publishing Course Kit (pp 379 to 536)

Unit V:

Internet for Everyone Alexis Leon and Mathews Leno
(Chapters: 1,2,3,4 & 5)

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Certificate in WEB DESIGNING
WEB DESIGNING

Unit – 1

Introduction

Internet – An Introduction: Internet Access / Dial-Up Connection – Internet Service Features. Getting Connected – Internet Addressing: IP Address – Domain Name – Electronic Mail – Uniform Resource Locator.

Unit – 2

WWW

The World Wide Web – Web Page – Net Surfing. Internet / Web Browsing –

MS.Internet Explorer – Viewers – Netscape Navigator – LYNX

Unit – 3

Internet Protocols and Email

Internet Protocols – TCP/IP – File Transfer Protocol (FTP) – Hypertext Transfer

Protocol (HTTP) – TELNET – GOPHER – WAIS. Electronic Mail – Email Messages –

Finding An Email Address – Mailing Lists – Smileys – Advantages & Disadvantages.

Unit – 4

Html Essentials

What is Html – Inside a Web Page – Common HTML Tags and attributes – Writing the first Webpage.

Formatting Text

Organising the Text – Basic Text Formatting – List Tags

Images

Working with Images – Formatting Images – Linking to External Images – Background Images

Hyperlinks

What is a Hyperlink – Working with <A> Tag.

Unit – 5

Image Maps

Basics – Approaches to Image Maps – Coding for Image Map

Tables

Basics – Table Tags – Table Formatting

Forms

Processing forms with Scripts – Form Controls.

Text Book

1. Internet for Everyone - Alexis Leon and Mathews Leon (UBS Publishers and Distributors Ltd.
- 2.HTML and XML for Beginners. -Michael Morrison -PHI

Chapters :

- Unit I : 1, 2, 5 from Text Book I
- Unit II : 3,4 from Text Book I
- Unit III : 6,8 from Text Book I
- Unit IV : 1,2,3,4 from Text Book II
- Unit V : 5,6,7 from Text Book II

Thiagarajar College, Autonomous, Madurai – 9
Department of Computer Science
Certificate in WEB DESIGNING

Web Designing Lab

List of Programs

Simple Html Program

10. Web page Designing with Heading and Font Tags
11. Web page Designing with <HR> and Marquee Tag

Hyper Links

12. Web page Designing to demonstrate the Link between different Documents
13. Web page Designing to demonstrate the Link within the same document
14. Web page Designing with anchor tag with different TARGET values

Tables

15. Design a Bio Data with Table
16. Web page Designing to implement the Concepts of Table Tags

Forms

17. Design a webpage using Form Attributes
18. Design a webpage with form controls and table

Image Map

10. Create a web page using Image Map

Thiagarajar College, Autonomous, Madurai – 9
Department of Computer Science
Diploma in WEB DESIGNING
Basics of Web Technologies

UNIT-I:

HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets; Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT-II:

Placing text in a Web browser, dialog boxes, objects basics working with objects, typing of objects, the Java Script Document Object Model etc. Forms used in web pages, Built in objects and cookies.

Working with events: events flow, event capture, event handlers, event object, Types of events, event properties, and load and unload events & getting the event object.

UNIT-III:

XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

UNIT-IV:

Java Beans: Introduction to Java Beans, Advantages of Java Beans, JDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

UNIT-V:

Web Servers and Servlets: Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues,

TEXT BOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1,2 ,3)
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH (Chapters: 25) (UNIT 4)

REFERENCE BOOKS:

1. Programming world wide web-Sebesta,Pearson
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1:
CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly for chap 8.
5. Murach's beginning JAVA JDK 5, Murach, SPD

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Department of Computer Science

Diploma in Web Desinging

Basics of Web Technology Lab

- 1.1 Programs to demonstrate Control Statements.
- 1.2 Programs to demonstrate Built-In Functions.
- 1.3 Programs to demonstrate User-Defined Functions.
- 1.4 Programs to demonstrate Class Concepts.
- 1.5 Programs to demonstrate Arrays.
- 1.6 Programs to embed JavaScript in a Web Page.
- 1.7 Programs to manipulate Web Forms.
- 1.8 Programs to handle Browser Events.
- 1.9 Programs to handle Frames.
- 1.10 Programs to perform Animation.
- 1.11 Programs to demonstrate Java Beans.
- 1.12 Programs using XML.
- 1.13 Program to demonstrate servlet

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Department of Computer Science
Advanced Diploma in WebDesigning
Advanced Web Technologies

UNIT-I:

Introduction to JSP: The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVCSetting Up and JSP Environment: Installing the Java SoftwareDevelopment Kit, Tomcat Server & Testing Tomcat

UNIT-II:

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations

UNIT III:

Active Server Pages: Introduction to server side programming, introduction to Internet Information Server, ASP development tools

ASP architecture: implicit ASP objects, scripting languages in ASP, creating reusable code blocks, VB script in ASP: conditional statements, loops and procedure

UNIT IV:

Combining VB script & HTML, redirecting the user , retrieving environment variables , creating and sending a web forms using Get and Post method and user session management.

UNIT V:

Database Access: Database Programming using JDBC,Studying Javax.sql.* package,Accessing a Database from a JSP Page, Application – Specific Database Actions,Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

Introduction to ADO object Model: creating an SQL statement, Insert, Update, Delete and Select statement, creating and configuring and ODBC data source.

Text Books:

1. Java Server Pages –Hans Bergsten, SPD O'Reilly
2. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
3. SamsTeach yourself Active Server Pages in 24 hours-Christoph Wille,Christian Koller(Techmedia)

Reference Books:

1. An Introduction to web Design and Programming –Wang-Thomson
2. Web Applications Technologies Concepts-Knuckles,John Wiley
3. Programming world wide web-Sebesta,Pearson
4. Web Warrior Guide to Web Programmimg-Bai/Ekedaw-Thomas
5. ASP Programming for the Obsolute Beginner by john Gosney(Thomson Course Technology)
6. Java Server Pages, Pekowsky, Pearson.

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Department of Computer Science
Advanced Diploma in Web Designing
Advanced Web Technology Lab

1. Programs to demonstrate on Interacting with Users Using ASP
2. Programs to demonstrate User Session Management Using ASP
3. Programs to handle Cookies Using ASP
4. Programs to handle Objects Using ASP
5. Programs to demonstrate on Sending Email Using ASP
6. Programs to demonstrate on Receiving Email Using ASP
7. Programs to manipulate Database Using ASP
8. Programs to demonstrate JDBC.
9. Program to demonstrate Error handling and debugging to share data Using JSP
10. Program to demonstrate Session sharing Using JSP