B.Sc.,
Computer science

THIAGARAJAR COLLEGE, MADURAI – 9.

(Re-Accredited with 'A' Grade by NAAC)

DEPARTMENT OF COMPUTER SCIENCE

B.Sc. COMPUTER SCIENCE

COURSE STRUCTURE (w.e.f 2014 -17batch onwards)

Semester – I

Course	Code No	Subject	Contact Hrs / Week	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Part I Tamil	P111	Ikkala Tamilum Valkkai Varalatru Ilakkiyamum	5	3	75	25	75	100
Part II English	P211	English through Prose	3	-	45	-	-	-
Core-I	MS11	Digital Principles & Applications	5	5	60	25	75	100
Core-II	MS12	Programming in C	4	4	60	25	75	100
Allied	AS11	Title will be decided by Maths Dept.	5	4	75	25	75	100
LAB-I	MSL11	C- Programming Lab	4	2	60	40	60	100
Value Education I	VE 1	Value Education I	2	2	30	15	35	50
Environmental Studies	ES 1	Environmental Studies	2	2	30	15	35	50
TOTAL			**30**	**22**				

Semester – II

Course	Code No	Subject	Contact Hrs / Week	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Part I Tamil	P121	Ilakkiya Tamilum Ariviyal Tamilum	5	3	75	25	75	100
Part II English	P221	English through Drama	3	3	45	25	75	100
Core -III	MS21	Object Oriented Programming with C++	5	5	60	25	75	100
Core –IV	MS22	Visual Programming	4	4	60	25	75	100
Allied	AS21	Title will be decided by Maths Dept.	5	4	75	25	75	100
LAB-II	MSL21	Object Oriented Programming Lab	4	2	60	40	60	100
Skill Based Elective I	SBE 1	Visual Programming Lab	4	2	60	15	35	50
TOTAL			**30**	**23**				

Semester – III

Course	Code No	Subject	Contact Hrs / Week	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Core –V	MS31	Fundamentals of Data Structure	5	4	75	25	75	100
Core –VI	MS32	System Programming	4	4	75	25	75	100
Core-VII	MS33	Data Base Management System	4	4	60	25	75	100
Allied	AS31	Title will be decided by Maths Dept.	5	4	75	25	75	100
LAB-III	MSL31	Data Structure Lab	4	2	60	40	60	100
LAB-IV	MSL32	Data Base Programming Lab	4	2	60	40	60	100
Value Education II	VE 2	Value Education-II	2	2	30	15	35	50
Non Major Elective I	NME 1	Software Development	2	2	15	15	35	50
TOTAL			**30**	**24**				

Semester – IV

Course	Code No	Subject	Contact Hrs / Week	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Core –VIII	MS41	Web Designing	4	4	60	25	75	100
Core –IX	MS42	Computer Graphics	5	4	75	25	75	100
Core Elective-I	EMS41		5	5	90	25	75	100
LAB-V	MSL41	Computer Graphics Programming Lab	5	2	75	40	60	100
Allied	AS41	Title will be decided by Maths Dept.	5	4	75	25	75	100
Skill Based Elective II	SBE 2	Web Designing Lab	4	2	60	15	35	50
Non Major Elective II	NME 2	Internet Applications	2	2	15	15	35	50
TOTAL			**30**	**23**				

Semester – V

Course	Code No	Subject	Contact Hrs / Week	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Core –X	MS51	Fundamentals of Computer Algorithms	5	5	75	25	75	100
Core –XI	MS52	Java Programming	6	5	90	25	75	100
Core –XII	MS53	Software Engineering	6	4	90	25	75	100
Core Elective-II	EMS51		5	5	75	25	75	100
LAB-VI	MSL51	Java Programming Lab	6	3	90	40	60	100
Value Education III	VE 3	Value Education-III	2	2	30	15	35	50
Self Study Paper			-	(Extra 5)*	-	-	100	100
TOTAL			**30**	**24**				

*** Carries Extra 5 credits that do not form part mandatory credits (140) required for completion of the course.**

Semester – VI

Course	Code No	Subject	Contact Hrs / Week	Credits	Total No of Hrs Allotted	Max Marks CA	Max Marks SE	Total
Core –XIII	MS61	Data Mining & Warehousing	5	4	75	25	75	100
Core –XIV	MS62	Data Communication & Networking	4	4	60	25	75	100
Core-XV	MS63	Operating System	5	4	75	25	75	100
Core –XVI	MS64	Advanced Java	4	4	60	25	75	100
Core Elective III	PJ61	Project	8	5	120	40	60	100
Skill Based Elective III	SBE 3	Advanced Java Lab	4	2	30	15	35	50
TOTAL			**30**	**23**				
Part V				**1**				
TOTAL CREDITS FOR SEMESTERS I to VI				**140**				

LIST OF ELECTIVES

A) Multimedia Technology
B) Computer Architecture
C) Principles of Mobile Computing
D) Client Server Computing
E) Artificial Intelligence

A. CONSOLIDATION OF CONTACT HOURS AND CREDITS: UG

Semester	Contact Hrs/ Week	Credits
I	30 hrs.	22
II	30 hrs.	23
III	30 hrs.	24
IV	30 hrs.	23
V	30 hrs.	24
VI	30 hrs.	23
Part – V	--	1
Total	180 hrs	140

B. Curriculum Credits: Part wise

Part I	**Tamil**	**2x3 = 6 Credits**
Part II	**English**	**1x3 = 3 Credits**
Part III	**Core**	**= 81 Credits**
(11+11+16+10+17+16)		
	Allied	**4x4 = 16 Credits**
	Core Electives	**3x5 = 15 Credits**
Part IV	**Value Education**	**3x2 = 06 Credits**
	Environmental studies	**1x2 = 02 Credits**
	Skill Based Electives	**3x2 = 06 Credits**
	Non – Major Electives	**2x2 = 04 Credits**
Part V		**1x1 = 01 Credits**
	Total	**140 Credits**

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 onwards)

.

Course	: B.Sc. Computer Science	Code No	:MS11
Class	: I Year	No of Hrs allotted	: 5
Semester	: I	No of credits	: 5
Title of the Paper: Digital Principles and Application			
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

Digital Logic

Basic gates-NOT, OR, AND- Universal logic gates– NOR, NAND-AND, OR invert gates- Positive and negative logic.

Combinational logic circuits

Boolean Laws and Theorems – Sum of Products method – Truth table to Karnaugh Map – Pairs, Quads, and Octets – Karnaugh simplifications – Don't care condition- Products of sums method – products of sums 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 and Checkers- Magnitude Comparator.

Unit-III

Number systems and codes

Binary Number System– 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.

Unit-IV

Clocks and Timing circuits

Schmitt trigger – 555 Timer-Astable – 555 Timer-Monostable.

Flip-Flops

RS FLIP FLOPs – Gated FLIP-FLOPs – Edge-triggered RS FLIP-FLOPs – Edge-triggered D FLIP-FLOPs – Edge-triggered JK FLIP-FLOPs – FLIP-FLOP Timing.

Unit-V

Registers

Types of Registers – Serial-In – Serial-Out – Serial-In – Parallel-Out – Parallel-In- Serial-Out – Parallel-In -Parallel-Out.

Counters

Asynchronous Counters – Decoding Gates – Synchronous Counter – Changing the Counter Modulus – Decade counters.

Text Book

Title	**:** Digital Principles and application
Author	**:** Albert Paul Malvino, Donald P.Leach, Gautam saha
Publisher	**:** McGraw Hill Edition
Edition	**:** seventh edition
Year	**:** reprint 2013.

Chapters:

Unit – I	: 2.1 to 2.4, 3.1 to 3.8
Unit – II	: 4.1 to 4.9
Unit – III	: 5.1 to 5.8, 6.1 to 6.8
Unit – IV	: 7.3 to 7.5, 8.1 to 8.6
Unit – V	: 9.1 to 9.5, 10.1 to 10.5

Reference:

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

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

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MS12
Semester	: I	No. of Hrs allotted	: 4
Class	: I	No. of Credits	: 4
Paper	: Core (2)		
Title of the Paper	: Programming in **C**		

Course Objectives

This course introduce programming concepts and helps students to develop programming skill in 'C' Language.

Unit-I Overview of C and Data types

History of C – importance of C – character set – C tokens – keywords and identifiers – constants – variables – data types – declaration variables – constants- defining symbolic constants – operators – input and output operations.

Unit-II Decision Making and Branching

Introduction – simple if – else..if – nested if – ladder if – switch statement – conditional operators – goto statements – while statement – do..while statement – for statement.

Unit-III Arrays and String

Introduction – one dimensional array – multi dimensional array – declaring and initializing string variables – reading and writing strings.

Unit-IV Function and structures

Introduction to functions – user defined function – defining a function – function calls – function declaration – category of functions – arguments and functions – recursion – string handling functions.

Introduction to structure – defining and declaring a structure – accessing structure members – arrays of structure – structure and function.

Unit-V Pointers and File Management

Introduction to pointers – understanding pointers – declaring and initializing of pointer variables.

Introduction to file – defining and opening a file – closing a file – input/output operations on file.

Text book

Title	**:**	Programming in ANSI C
Author	**:**	E.Balagurusamy
Publisher	**:**	McGraw Hill Publishing Company Ltd
Edition	**:**	Sixth
Year	**:**	2012

Chapters (**Relevant Topics Only**)

Unit -I	:	1.1, 1.2, 2.1 to 2.8, 2.11, 2.12, 3.1 to 3.8, and 4.1 to 4.3
Unit -II	:	5.1 to 5.9, 6.1 to 6.4
Unit -III	:	7.1 to 7.7, 8.1 to 8.4
Unit I-V	:	9.1, 9.2, 9.5, 9.7, 9.8, 9.10, 9.16, 10.1 to 10.4, 10.8, 10.11
Unit -V	:	11.1 to 11.5, 12.1 to 12.4

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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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MSL11
Class	: I Year	No of Hrs allotted	: 4
Semester	: I	No of credits	: 2
Paper	: Lab - I		

Title of the Paper: C Programming Lab

Simple programs:

1. Simple interest

2. Find the biggest from two nos-ordinary /switch case/conditional operator methods

3. Find the biggest from three nos

4. Check the given no is odd or even –ordinary/switch case/conditional operator methods

5. Prime no checking

6. Print all prime nos between any two given limit

7. Check the given character is vowels or not?

8. Perform various arithmetic operations using switch case

9. Find the sum of digits of a given no

10. Binary to decimal-Decimal to binary conversion

Arrays:

1. Arrange "n" nos in ascending and descending order

2. Arrange "n" strings in alphabetical order

3. Palindrome checking

4. Matrix addition/ subtraction/multiplication

Function and structure:

1. Calculate the factorial value by recursion

2. Reverse a string by recursion

3. Mark list processing-structure and call by value technique

4. Mark list processing- structure and call by reference technique

5. EB bill calculation - structure and call by value technique

6. EB bill calculation - structure and call by reference technique

Files:

1. Create a data file to store 'n' nos and separate odd and even nos

2. Create a data file to store 'n' characters and separate vowel and non-vowels.

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(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MS21
Class	: I Year	No of Hrs allotted	: 5
Semester	: II	No of credits	: 5
Title of the Paper	: Object Oriented Programming with C++		
Paper	: Core (3)		

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): Procedure oriented programming - OOP Paradigm – Basic concepts of OOP – Benefits of OOP – Object Oriented Languages – Applications of OOP.

Beginning with C++: Simple C++ program – An example with Class – Structure of C++ program.

Unit-II

Introduction to C++: Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++.

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

Unit-III

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

Constructors and Destructors - Operator overloading andtype conversions.

Unit-IV

Inheritance: Single Inheritance – Multilevel Inheritance – Multiple InheritanceHierarchical Inheritance – Hybrid Inheritance.

Polimorphism: Pointers to Objects - Virtual functions.

Unit-V

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

Text Book

Title	**:** Object Oriented Programming with C++
Author	**:** E.Balagurusamy
Publisher	**:** McGraw Hill Education, New Delhi
Edition	**:** Sixth Edition
Year	**:** Secondreprint 2013

Chapters:

Unit – I	: Chapters 1, 2,
Unit – II	: Chapters 3, 4
Unit – III	: Chapters 5, 6.1-6.5, 6.7, 6.11, 7
Unit – IV	: Chapters 8, 9.3 to 9.7
Unit – V	: Chapters 11.1 to 11.7,11.9,11.10

Reference:

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

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DEPARTMENT OF COMPUTER SCIENCE

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Course	: B.Sc. Computer Science	Code	**:** MS22
Class	: I Year	No of Hrs allotted	: 4
Semester	: II		
Title of the Paper	: Visual 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.

Unit-I

Introduction to Visual Basic:

Features of Visual Basic - Visual Basic Editions -The Visual Basic Philosophy – Developing an Application.

Creating an Application:

Objectives – The Tool Box – Project Explorer – The Properties Window- The Form Window – Understanding Projects.

Unit-II

Controls:

Customizing the Tool Bar – Text Box Control – The Picture Box – Label Box – Option Button – Frame – List Box – Combo Box – Data – Command Button - Check Box – The Line and Shape Controls – The Image Control – OLE (Object Linking and Embedding) – Other Tools for Software Development – Menu Bar – Context Menu – Tool Bars – Tool Box.

Variables in Visual Basic:

Declaring Variables – Data Types – The Null Value – The Error Value – The Empty Value – The Scope of a Variable – Module Level Variables – Declaring Variables – Constants – Creating Your Own Constants - Scope of a Constant – Circular References – Converting Data Types – Arrays – Declaring Fixed –Size Arrays – Multi-dimensional arrays- Dynamic Arrays – The Preserve Keyword.

Unit-III

Writing Code in Visual Basic:

The Code Window – The Anatomy of a Procedure – The Decision Maker...If – The Loop - The While Loop – Select Case... End Select

Working with Files:

Visual Basic File System Controls – Types of Files –Working with Files-Sequential Access File-Random Access File-Binary Access File

Unit-IV:

The Common Dialog Control

Working with Common Dialog Control- File Open Dialog box- Saving a File- Changing the Color- Printing a Document- Rich Textbox Control-Changing the color of the selected Text- Changing the Indent.

Introduction to Databases

Database – Creating a Table

Unit-V:

Working with Data Control

The Data Control – The Bound Controls – Coding – The DBGrid Control- Data Report

Text Book:

Title	: Programming with Visual Basic 6.0
Author	: Mohammed Azam
Publisher	: Vikas Publishing House Pvt Ltd
Edition	: Ist
Year	**:** reprint 2010

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

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

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Course	: B.Sc. Computer Science	Code	**:** MSL21
Class	: I Year	No of Hrs allotted	: 4
Semester	: II		
Title of the Paper	: Object Oriented Programming Lab	No of credits	: 2
Paper	: Lab - II		

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1. Arithmetic operations
2. Simple and compound interest
3. Default arguments
4. Reference variables
5. Nested functions
6. Function overloading
7. Static member function
8. Object as function argument – Add two times
9. Using friend function-swap
10. Function returning objects – Complex number addition
11. Multiple constructors in a class
12. Copy constructor
13. Unary operator overloading – member function
14. Unary operator overloading – friend function
15. Operator overloading - Complex no.addition
16. Operator overloading – Matrix addition
17. Operator overloading – Matrix multiplication
18. Constructors in derived classes
19. Class to basic conversion
20. Basic to class conversion
21. Class to class conversion
22. Single Inheritance - Private mode
23. Multilevel Inheritance
24. Multiple Inheritance
25. Hybrid inheritance
26. Virtual base class
27. Array of objects - Mark process, EB, Pay process
28. Pointer to objects
29. This pointer
30. Virtual functions
31. File creation

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: SBE-I
Class	: I Year	No of Hrs allotted	:4
Semester	: II		
Title of the Paper	: Visual Programming Lab	No of credits	:2

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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. Write a program for menu creation.

5. Using pop-up menu write simple program.

6. Write a program to implement mouse events.

7. Write a program to create sequential/random file using file system controls.

8. Program to design a digital clock.

9. Process student's mark list using data control i.e. using DAO Control.

10. Write a program to generate Data report

12. Write a program using Input and Message Dialog boxes.

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(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MS31
Class	: II Year	No of Hrs allotted	: 5
Semester	: III	No of credits	: 4
Course Title	: Fundamentals of Data Structure		
Paper	: Core (5)		

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 – SPARKS - Statements - Create programs – Analyze programs.

Array

Axiomatization – Ordered Lists - Sparse Matrices Representation of Arrays.

Unit – II

Stacks and Queues

Fundamentals - A Mazing problem –Evaluation of Expressions – Multiple Stacks and Queues.

Linked Lists

Singly Linked lists – Linked Stacks and Queues – Storage pool – More on linked lists.

Unit –III

Doubly Linked lists – Dynamic storage Management -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: Set representation - Decision 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, SartajSahni
Publisher	**:** Galgotia Book source
Edition	**:**Fourth Print
Year	**:** 2013.

Chapters (Relevant Topics Only)

Unit – I	: 1 , 2
Unit – II	: 3,4.1,4.2,4.3,4.5
Unit-III	: 4.8,4.9,4.11
Unit – IV	: 5.1 to 5.6, 5.8.1, 5.8.2
Unit – V	: 6.1 to 6.3

Reference

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

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MS32
Class	**:** II Year	No. of Hrs allotted: 4	
Semester	: Third	No. of Credits	: 4
Paper	: Core (6)		
Course Title	: System Programming		

COURSE OBJECTIVE

Introducing and understanding system programs concepts and their role in computing environment.

UNIT – I Assemblers

Elements of assembly language – Pass structure of assemblers - Design of a two-pass assembler.

UNIT – II Macros and Macro Preprocessor

Introduction – Macro definition and Call – Macro Expansions – Nested Macro calls – Advanced Macro Facilities – Design of a Macro Preprocessors.

UNIT – III Linkers

Introduction to Linker – relocation and linking concepts – design of a linker – Self Relocating Program.

UNIT – IV Compiler and Interpreters

Introduction to compiler – semantic gap – scope rules - memory allocation – compilation of control structures – code optimization - benefits of interpretation – overview of interpretation

UNIT – V Software Tools

Introduction – software tools for programming development - editors – debug monitors – user interface.

Text book

Title	:	Systems Programming
Author	:	D.M. Dhamdhere
Publisher	:	Tata McGraw Hill Education Pvt., Ltd, New Delhi
Edition	:	Second
Year	:	2012

Chapters: (Relevant topics only)

Unit I	: 3.1, 3.3, 3.4.1 to 3.4.6
Unit II	: 4.1 to 4.5, 4.6.1 to 4.6.5
Unit III	: 5.1 to 5.4
Unit IV	: 7.1, 7.4, 7.5.1, 7.5.2, 7.5.3.1, .7.5.3.2, 7.5.3.4, 7.7, 7.8, 8.1, 8.2
Unit V	: 9.1 to 9.6

Reference

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

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Course	: B.Sc. Computer Science	Code	**:** MS33
Class	: II Year	No of Hrs allotted	: 4
Semester	: III	No of credits	: 4
Title of Paper	: Data Base Management System		
Paper	: Core (7)		

Course Objective

Understanding DBMS concept and learning SQL operations.

Unit-I: Introduction to Database Systems and Structure:

Database System Applications-Purpose of Database System-View of Data-Database Languages-Relational Databases –Database design-Data Storage and Querying-Transaction Management-Database Architecture –Data Mining and Information Retrieval-Specialty Databases-Database users and administrators.

Unit-II: Relational Databases:

Introduction to relational model: Structure of Relational databases –Database schema-Keys-Schema Diagrams-Relational Query Languages-Relational Operations

Introduction to SQL: Overview of SQL language-SQL Data Definition-Basic Structure of SQL Queries-Additional Basic Operations.

Unit-III: SQL:

Set Operations-Null Values-Aggregate Functions-Nested Sub Queries-Modification of the Database.

Intermediate SQL: Join Expressions- Views.

Unit-IV: Intermediate SQL:

Transactions-Integrity Constraints –SQL Data types and Schemas-Authorization.

Advanced SQL: Accessing SQL from a Programming Language-Functions and Procedures-Triggers-Recursive Queries.

Unit-V:

Formal Relational Query Languages:

The Relational Algebra-The Tuple Relational Calculus-The Domain Relations Calculus

Database Design :

Database Design and The ER Model: Overview of the Design concepts-The Entity –Relationship Model-Constraints –Removing redundant attributes in Entity sets-Entity Relationship Diagrams-Reduction to Relational Schema

Text Books:

Title: Database Systems Concepts
Author: Abraham Silberschatz ,Henry F.Korth, S.Sudarshan
Publisher: MC Graw Hill Education
Edition: Sixth
Year: 2013

Chapters:

UNIT – I: 1.1 – 1.12
UNIT – II: 2, 3.1 – 3.4
UNIT – III: 3.5 – 3.9, 4.1 – 4.2
UNIT – IV: 4.3 – 4.6, 5.1 – 5.4
UNIT – V: 6, 7.1 – 7.6

Reference:

Title : Easy oracle PL/SQL programming : Get started fast with working PL/SQL code Example
Author : John Garmany
Publisher : Easy oracle series
Year : 2005

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

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Course	: B.Sc. Computer Science	Code	: MSL31
Class	: II Year	No of Hrs allotted	: 4
Semester	: III		
Title of the Paper	: Data Structure Lab	No of credits	: 2
Paper	: Lab - III		

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1. Sorting numbers and strings.

2. Searching: Sequential and Binary

3. Sparse Matrix Transpose..

4. Recursion: GCD, Fibonacci.

5. Polynomial addition using ordered lists.

6. Stack using Array: Inserting and deleting an element (PUSH & POP)

7. Using Stack infix to postfix conversion.

8. Evaluation of an expression using stack.

9. Queue – using Array :Inserting and deleting an element.

10. Circular Queue implementation.

11. Linked List - Inserting and deleting an element.

12. Stack – using Linked List

13. Queue using Linked list

14. Doubly Linked List - Inserting and deleting an element.

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MSL32
Class	: II Year	No of Hrs allotted	: 4
Semester	: III	No of credits	: 2
Title of the Paper	: Data Base Programming Lab		
Paper	: Lab - IV		

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1. Performing DDL, DML operations in a table.

2. Creating and dropping Views/ Synonyms / Sequence.

3. Writing procedures and passing values.

4. Setting predefine Exception

5. Creating User defined Exception

6. Writing Function

7. Creating Package

8. Creating Triggers

9. Splitting a table values and stores them into multiple tables.

10. Simple PL/SQL programs (Non-database problems).

11. Writing program in PL/SQL using aggregate function.

12. Performing Join & Set operations.

THIAGARAJAR COLLEGE, MADURAI – 9.

(Re-Accredited with 'A' Grade by NAAC)

DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

.

Course	: B.Sc. Computer Science	Code	:
Class	: II Year	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

Title : Computer Primer
Author : Dharma Rajaraman, V. Rajaraman
Edition : Eastern Economy Edition Second edition.
Year : 1996

Chapters:

Unit – I : 5 & 6
Unit – II : 16.1 to 16.5

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MS41
Class	: II Year	No of credits	: 4
Semester	: IV	No of Hrs allotted	: 4
Title of the Paper	: Web Designing		
Paper	: Core (8)		

Objective: Giving the students the insights of the internet programming and how to designs and implement complete application on the web using CSS, javascript, PHP and MySQL.

UNIT I : Introduction to HTML

Introduction – Editing HTML5 – First HTML5 example- W3C HTML5 validation service – headings – linking – images – Special characters and horizontal rules – lists – Tables – forms – Internal linking – Meta elements – New HTML5 form input type – input and data list elements and auto complete attribute – page – structure elements.

UNIT II : Cascading Style Sheets

Introduction to CSS – Importing a style sheet – embedded style settings, CSS Rules, Style types, CSS Selectors, CSS cascade, , ,Measurements, Fonts and Typography, Managing Text styles, CSS colors, positioning elements, pseudo classes, pseudo elements, shorthand rules, the box model and layout , advances CSS with CSS3

UNIT III: Java Script

Exploring JavaScript, Expressions and control flow in java script, JavaScript functions, objects, and arrays.

UNIT IV: PHP

The structure of PHP –Expression and control flow in PHP,PHP functions and objects – PHP arrays .

UNIT V: MySql & PHP

ACCESSING MySQL using PHP – Form handling – Cookies, Sessions, Authentication

Text Book

1. **Title** : Internet and World wide web How to Program
Author : Paul J.Deitel – Harvey M.Deitel – Abbey Deitel
Publisher : Prentice Hall
Edition : Fifth Edition
Year : 2012

2. **Title** : Learning PHP, MySQL,Javascript and CSS , A step by step Guide to creating Dynamic Web Sites
Author : Robin Nixon
Publisher : O'Reilly Media
Edition : Second Edition
Year : 2012

Chapters

UNIT – I : 2, 3 from Book1
UNIT - II : 18, 19 from Book2
UNIT – III : 13, 14,15 from Book2
UNIT – IV : 3,4,5,6 from Book2
UNIT - V : 10,11,12 from Book2

Reference Book:

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

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	**: B.Sc. Computer Science**	**Code**	**: MS42**
Semester	**: IV**	**No. of Hrs Allotted**	**:5**
Class	**: II Year**		
Paper	**: Core(9)**		
Title of the Paper: Computer Graphics		**No. of Credits**	**:4**

Course Objective

Understanding the necessity and need of representing data in pictorial/image format and learn the knowledge behind to create and manipulate an image with the help of computer.

Unit-I Line Generation and Graphics Primitives

Line Generation: Overview of Graphics concept- Line segment - Vectors- Pixels and FrameBuffer- Vector Generation- Bresenham's algorithm-Character Generation.

Graphics Primitives: Introduction- Display devices.

Unit–II Display File and Polygon

Display file: Concept- Display file primitive operations- Display file interpreter- Normalized device co-ordinates- Display file structure and algorithms.

Polygon: Introduction- Polygon- Polygon Representation- Entering Polygons- Inside Test- Polygon interfacing algorithms

Unit–III Transformations

Transformations: Introduction- Matrices- Scaling - Rotation- Homogeneous coordinates and Translation- Rotation about an arbitrary point.

Unit–IV Segments

Segments: Introduction- Segment Table- Segment Creation- Closing a Segment- Deleting a Segment- Renaming a Segment- Saving and Showing a Segment- Other Display file Structure.

Unit–V Windowing and Clipping

Windowing: Introduction- Windowing- Multiple Windowing
Clipping: Concepts- Cohen-Sutherland Outcode Algorithm- Sutherland-Hodgman Algorithm- Clipping of polygon.

Textbook

Title :Computer Graphics (A Programming Approach)
Author :StevenHarrington
Publisher :McGraw-Hill International Editions
Edition :Second
Year :1987

Chapters **(Relevant Topics Only)**

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

Reference

Title **:**ComputerGraphics
Author **:**DonaldHearn ,M.PaulineBaker
Publisher **:**PHI Prentice Hall
Edition **:**Second
Year **:**2001

Reference

Title **:**ComputerGraphics-Principles and Practices
Author **:**Foley,VanDam
Publisher **:** Addison Wesley
Edition **:**Second
Year **:**1997

THIAGARAJAR COLLEGE, MADURAI – 9.
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DEPARTMENT OF COMPUTER SCIENCE
(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MSL41
Semester	: IV	No. of Hrs allotted	: 5
Class	: II Year	No. of Credits	:2
Paper	: Lab - V		
Title of the Paper	: CG Programming Lab		

Line Segment

1. Creating a line segment - Using Vector generation algorithm
2. Creating a line segment - Using Bresenham's algorithm.

Polygon

1. Draw a Polygon - Using Vector generation algorithm
2. Draw a Polygon - Using Bresenham's algorithm.

Transformation

1. Scale a line segment.
2. Rotate a line segment.
3. Translate a line segment.
4. Rotate a line segment about an arbitrary point.
5. Scale a polygon.
6. Rotate a polygon.
7. Translate a polygon.
8. Rotate a polygon about an arbitrary point.
9. Animating an image.

Segment

1. Create a segment.
2. Delete a segment.
3. Scale a segment.
4. Rotate a segment.
5. Translate a segment.

Clipping

1. Clip a line segment.

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** SBE-II
Class	: II Year	No of credits	: 4
Semester	: IV	No of Hrs allotted	: 2

Title of the Paper : Web Designing Lab

1.Program to illustrate CSS embedded style settings.

2.Program to illustrate CSS colors and positioning elements.

3.Program to demonstrate box model and layout.

4.Program to illustrate JAVA script objects.

5.Program to demonstrate JAVA script arrays.

6.Program to illustrate JAVA script functions using control flow statements.

7.Program to illustrate PHP objects.

8.Program to illustrate PHP arrays.

9.Program to illustrate PHP functions.

10. Program to illustrate form handling using PHP and MySql.

11. Program to illustrate PHP session and cookies.

12. Program to illustrate authentication.

13. Program to illustrate form validation using Java Script and PHP

14. Program to display error handling messages using Java Script.

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: U.G	Code	**:** NME-II
Class	: II Year	No of Hrs allotted	: 2
Semester	: IV	No of credits	: 2

Title of the Paper : Internet Applications

.

Unit-I: Internet and World Wide Web:

Introduction - what is special about internet - Internet access-Internet Basics-Internet protocols -Internet Addressing-WWW(World Wide Web)-Web Pages & HTML tags-Web Browsers –Searching the Web- internet chat

Unit-II: Overview of E-Mail

Introduction – how e-mail works? – Why use e-mail- E-Mail- names and addresses – mailing basics – how private is the e-mail? – email ethics – spamming – email advantages and disadvantages – tips for effective e-mail use-simyles.

Text books

Title : Fundamentals Of Internet Technology
Authors :Alexis Leon & Mathews Leon
Publisher : Vikas Publishing House Pvt Ltd
Edition : second
Year **:** 1999

Chapters

Unit-I : 24
Unit-II: 25

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course : B.Sc. Computer Science Code: MS51
Semester : V
Class : III Year No. of Hrs allotted: 5
Paper : Core(10)
Title of the Paper: Fundamentals of Computer Algorithms No. of Credits : 5

Course Objective:

To introduce the various algorithm design techniques.
To apply these techniques to solve problems.

UNIT I Introduction

What is an algorithm? – Algorithm specification – Performance analysis – Randomized algorithms.

UNIT II Divide – and – Conquer

General method – Binary search – Finding the maximum and minimum – Merge sort – Quick sort – Selection – Strassen's Matrix multiplication.

UNIT III Greedy Method

The General method – Knapsack problem – Tree vertex splitting – Job sequencing with deadlines – Minimum cost spanning trees.

UNIT IV Dynamic Programming

The General method – Multistage graphs – All pairs shortest paths – Single source shortest paths: General weights

UNIT V Backtracking

The General method – The 8 – queens problem – Sum of subsets - Graph coloring

Text Book:

Title : "Fundamentals of Computer Algorithms"
Authors : Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran
Publishers : Galgotia Publications Pvt . Ltd
Year : 2010

Chapters

Unit –I : 1.1 – 1.4
Unit –II : 3.1 - 3.7
Unit – III : 4.1 – 4.5
Unit –IV : 5.1 – 5.4
Unit –V : 7.1-7.4

Reference Books:

1. **Title** : Computer Algorithms , Introduction to Design and Analysis **,**
   Authors : Sara Base , Allen Van Gelder
   Publishers : Pearson Education (Singapore) Pvt Ltd
   Edition : Third
   Year : Eighth Indian Reprint, 2003

2. **Title** : Data Stuctures and Algorithms, Concepts Techniques and Applications
   Author : G A Vijayalakshmi Pai
   Publisher : Tata McGraw – Hill Publishing Company Limited
   Year : 2008

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MS52
Class	: III Year	No of Hrs allotted	: 6
Semester	: V	No of credits	: 5
Title of the Paper: Java Programming			
Paper	: Core (11)		

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

Object Oriented Programming – A First Simple Program.

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.

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 –Applet Skeleton - Simple Applet display method – Requesting repainting – HTML Applet tag – Passing parameter to Applet – Improving the Applet

Unit-V

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.

Working with Graphics and Text

Working with graphics - Working with color – Setting the paint mode - Working with fonts - Managing Text Output using Font Metrics.

Using AWT Controls, Layout Managers, and Menus

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

Text Book

Title	**:** The Complete Reference Java 2
Author	**:** Herbert Schildt
Publisher	**:** McGraw Hill Edition
Edition	**:** Fifth
Year	**:** 54th reprint 2013

Chapters: (Relevant Topics only)

Unit – I	: 1,2,3
Unit – II	: 7,8
Unit-III	: 9,10
Unit-IV	: 11,19
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 A Primer
Author	**:** E.Balagurusamy
Publisher	**:** Tata McGraw Hill
Edition	**:** Fourth Edition 2010 First reprint

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

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Course	: B.Sc. Computer Science	Code	**:** MS53
Class	: III Year	No of Hrs allotted	: 6
Semester	: V	No of credits	: 4
Title of the Paper: Software Engineering			
Paper	: Core(12)		

Course Objective

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

UNIT I: INRODUCTION 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: Introduction – enhancing maintainability during development, managerial aspects of software maintenance – configuration management – source code metrics – other maintenance tools and techniques.

Text Book:

Title	**:** Software Engineering
Author	**:** Richard Fairley
Publisher	**:** Tata Mcgraw-Hill
Edition	**:** 39th reprint
Year	**:** 2013

Chapters:

Unit – I	: 1
Unit – II	: 2
Unit – III	: 3,4.1,4.2
Unit – IV	: 5.1-5.8,6
Unit – V	: 8,9

Reference Books:

Title	**:** Software Engineering Concepts
Author	**:** Roger S. Pressman
Publisher	**:** McGraw Hill
Edition	**:** 7th
Year	**:** 2007

Title	**:** Software Engineering
Author	**:** IAN SOMMERVILLE
Publisher	**:** Pearson Education Asia
Edition	**:** 10th
Year	**:** 2010

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: MSL51
Class	: III Year	No of Hrs allotted	:6
Semester	: V	No of credits	:3
Title of the Paper	: JAVA Programming Lab		
Paper	: Lab - VI		

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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 mouse events and keyboard events

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 17 batch onwards)

Course : B.Sc. Computer Science Code: MS 61
Semester : Sixth No. of Hrs allotted: 5
Paper : Core-(13) 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 WAREHOUSING: Introduction – What is a Data Warehouse? – Definition – Multidimensional Data Model – OLAP operations – Warehouse Schema – Data Warehousing Architecture - Warehouse Server – Metadata – OLAP Engine – Data Warehouse Backend Process – Other Features – Summary .

UNIT II

DATA MINING: Introduction - What is Data Mining? – Data Mining: Definitions – KDD vs. Data Mining – DBMS vs. DM – Other Related Areas – DM Techniques - Other Mining Problems – Issues and Challenges in DM – DM Application Areas – DM Applications –Case Studies – Conclusion.

UNIT III

ASSOCIATION RULES: Introduction **–** What is an Association Rule? – Methods to Discover Association Rules – Apriori Algorithm – Partition Algorithm – Pincer – Search Algorithm – Dynamic Itemset Counting Algorithm – FP- tree Growth Algorithm – Éclat and dEclat – Rapid Association Rule Mining – Discussion on Different Algorithms – Incremental Algorithm – Border Algorithm – Generalized Association Rule – Association Rules with Item Constraints - Summary.

UNIT IV

CLUSTERING TECHNIQUES : Introduction - Clustering Paradigms – Partitioning Algorithms – k – Medoid Algorithms – CLARA – CLARANS –Hierarchical Clustering – DBSCAN –BIRCH – CURE – Categorical Clustering Algorithms – STIRR – ROCK – CACTUS – Conclusion .

UNIT V

DECISION TREES: Introduction **-** What is a Decision Tree? – Tree Construction Principle – Best Split – Splitting Indices – Splitting Criteria – Decision Tree Construction Algorithms – CART – ID3 – C4.5 – CHAID – Summary – Decision Tree Construction with presorting – RainForest – Approximate Methods – CLOUDS – BOAT – Pruning Technique – Integration of Pruning and Construction – Summary : An Ideal Algorithm – Other Topics – Conclusion.

Text Book:

Title	: **"DATA MINING TECHNIQUES",**
Authors	: Arun K Pujari
Publishers	: University Press
Edition	**:** Second
Year	: 2012

Chapters

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

Reference Books:

1. **Title** : **"Data Mining Concepts and Techniques", Second Edition**
   Authors : Jiawei Han and Micheline Kamber
   Publishers : Morgan Kaufmann Publishers, An Imprint of Elsevier
   Year : 2006

2**. Title** : "**Data Mining , Practical Machine Learning Tools and Techniques"**
   Authors : Ian H.Witten and Eibe Frank
   Publishers : Morgan Kaufmann Publishers, An Imprint of Elsevier
   Year : 2010 3rd Edition

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

.

Course	: B.Sc. Computer Science	Code	**:** MS62
Class	: III Year	No of Hrs allotted	: 4
Semester	: VI		
Title of the Paper	: Data communication and Networking	No of credit	: 4
Paper	: Core (14)		

Course Objective

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

Unit-I

Introduction – Data communications - Networks **.**
Network models - Layered tasks - The OSI model-Layers in the OSI model-TCP/IP protocol suite.

Unit-II

Transmission media: Guided Media - Unguided media.

Error detection and correction: Introduction – Block coding – Linear Block codes – Cyclic Codes – Checksum.

Unit-III

Data Link control : Framing-Flow and Error control-Protocols-Noiseless channels-Noisy channels

Wired LANs: Ethernet: IEEE standards-Standard Ethernet.

Unit-IV

Network layer: IPv4 Addresses - Internetworking-IPv4.

Routing protocols : Distance vector Routing & Link state Routing

Unit-V

Transport layer: Process-to-process delivery-User Datagram Protocol(UDP)-TCP.

Application layer: Domain Name Space - Remote Logging - Electronic Mail and File Transfer.

Text Book

Title	**:** Data Communications and Networking
Author	**:** Behrouz A.Forouzan
Publisher	**:** McGraw Hill Publishing Company Limited
Edition	**:** Fourth Edition
Year	**:** Tenth reprint 2008

Chapters:

Unit-I	: 1.1 to 1.2, 2.1 to 2.4
Unit-II	: 7.1 to 7.2, 10.1 to 10.5
Unit-III	: 11.1 to 11.5, 13.1 to 13.2
Unit-IV	: 19.1, 20.1,20.2, 22.3 (Page no:660-674).
Unit-V	: 23.1 to 23.3, 25.2, 26.1 to 26.3

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.
Year	**:** 2006, PHI learning Pvt Ltd.

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DEPARTMENT OF COMPUTER SCIENCE

(From2014–2017 Batch onwards)

Course	:B.Sc. Computer Science	Code	**:**MS63
Semester	: VI	No.oHrsAllotted	:5
Class	: III	No.of Credit	:4
Paper	: Core(15)		
Title of the Paper	:Operating Systems		

Course Objective

Understanding the importance of OS and its functionality and managements and know how it makes a system alive.

Unit-I Introduction and Operating System Structure

Introduction: OS Concepts- Batch Systems- Multiprogramming System- Timesharing Systems- Distributed Systems.

System Structure: System Components- System Calls.

Unit-II Process and CPU Scheduling

Process: Process concept- Process Scheduling- Operations on Process- Cooperating Processes- Interprocess Communication

CPU Scheduling: Basic Concepts- Scheduling Criteria-Scheduling Algorithms.

Unit-III Process Synchronization and Deadlock

Process Synchronization: Background- Critical Section Problem- Semaphores

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

Unit-IV Memory Management and Virtual Memory

MemoryManagement: Background-Swapping–Contiguous Memory Allocation–Paging-Segmentation.

Virtual Memory: Background- Demand Paging–Page Replacement– Allocation of Frames- Thrashing.

Unit-V File System and Disk Scheduling

File System: File Concepts−Access Methods–Allocation Methods- Free Space Management.

Disk Scheduling: Disk Structure-Disk Scheduling- FCFS Scheduling- SSTF Scheduling- SCAN and CSCAN scheduling- LOOK and CLOOK Scheduling.

Textbook

Title	**:Operating System Concept**
Author	**:Silberschatz Galving Gange**
Publisher	**:Wiley India (P) Ltd.,**
Edition	**:SixthEdition**
Year	**:2008**

Chapters **(RelevantTopicsonly)**

Unit–I	: 1.1 to 1.5, 3.1, 3.3
Unit–II	: 4.1 to 4.5, 6.1 to 6.3
Unit–III	: 7.1 to 7.4, 8.1 to 8.7
Unit–IV	: 9.1 to 9.5, 10.1,10.2, 10.4 to 10.6
Unit–V	: 11.1 to 11.3, 12.4,12.5, 14.1,14.2

Reference

Title	:Operating Systems
Author	:William Stallings
Publisher	**:PHIPrentice Hall**
Edition	:Second Edition
Year	:2000

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** MS64
Class	: III Year	No of Hrs allotted	: 4
Semester	: VI		
Title of the Paper	: Advanced Java	No of credit	: 4
Paper	: Core (16)		

OBJECTIVE:

It provides knowledge to develop dynamic websites and web applications to the students.
To develop advanced software applications using JSP,JDBC concepts.

UNIT -I

INTRODUCTION TO SERVLETS:

Servlet lifecycle-Servlet classes-Threading models-HTTP sessions. The JSP development model-Component of a JSP page-A complete example

UNIT-II

EXPRESSIONS-SCRIPTLETS-DECLARATIONS

Expression, Script lets, Declaration, Session Tracking

UNIT – III

JSP TAGS EXTENSIONS:

Introduction to custom tags-Developing your first custom tag-How tags handlers work-Tag libraries-The tag handler API-The tag handler lifecycle-Defining tag attributes-The iteration tag interface-The body tag handler API.JSP Standard Tag Library[JSTL]

UNIT-IV

DATABASE ACCESS WITH JDBC:

Overview of JDBC-JDBC drivers-Connecting to a database with driver manager-Connecting to a database using a JNDI data source-The statement interfaces-Result sets-Using meta data.

UNIT-V

JSP AND XML:

XML overview-XML processing models-Parsing XML-XSL transformations with XSLT-XML syntax for JSP.

TEXT BOOK:

1. TITLE : The Complete Reference JSP 2.0
AUTHOR : Phil Hanna
PUBLISHER: Tata McGraw Hill Education pvt..
EDITION : Reprinted 2010

CHAPTERS:

UNIT I : 3,5
UNTI II : 6,8(162-174)
UNIT III : 11,13
UNIT IV : 15
UNIT V : 16

REFERENCE BOOK:
TITLE : JAVA Server Pages,
PUBLISHER: O'reilly,
AUTHOR : Hansbergsten
EDITION : 3rd edition,2003.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	: SBE - III
Semester	: VI	No. of Hrs allotted	:4
Class	**:** III Year	No. of Credits	: 2
Title of the Paper	: Advanced Java Lab		

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1. Servlet session.
2. Expression evaluation using JSP.
3. Illustrating JSP tags libraries.
4. Session tracking using JSP.
5. Program to illustrate the concept of JDBC connectivity.
6. Program to illustrate the concept of JDBC statement interfaces.
7. XML usage within JSP.
8. Illustrate JSP custom tags.
9. Simple programs using JSP.
10. Page directive illustration using JSP.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code No : EMS41/51	
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

Introduction to 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 – Graphics 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.

Text Book

Title	**:** Multimedia Technology and Applications
Author	**:** David Hillman
Publisher	**:** Galgotia Publications Pvt. Ltd
Edition	**:**Reprint 2013
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

Reference:

Title	**:** Multimedia making it work
Author	**:** Tay Vaughan
Publisher	**:** McGraw Hill Company
Edition	**:** 8th
Year	**:** 2010

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

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code No: EMS41/51	
Class	: II/III	No of Hrs allotted	: 5
Semester	: IV/V		
Title of the Paper	: Computer Architecture	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 – Input, Output and Interrupt – Complete Computer Description.

Unit –II

CPU

General register organization – Design of arithmetic logic shift 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 – Vector Processing - Array processors – Multiprocessors – Interconnection structures.

Text Book:

Title	**:** Computer System Architecture
Author	**:** M.Morris Mano
Publisher	**:** PearsonPrintice Hall
Edition	**:** Third
Year	**:** Twelfth Impression 2013

Chapters:

Unit – I	: 5.1 to 5.8
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, 9.6, 9.7, 13.1, 13.2

Reference:

Title	**:** Computer organization
Author	**:** V.CarlHamacher, ZvoknoG.Vranesic, SafwatG.Zaky
Publisher	**:** Tata Mc-Graw Hill
Edition	**:** 4th Revised
Year	**:** 2008

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Course	: B.Sc. Computer Science	Code	:EMS41/51
Class	: II/III Year	No of credits	: 5
Semester	: IV/V	No of Hrs allotted	: 5
Title of the Paper	: Mobile Computing		
Paper	: Elective – I/II		

OBJECTIVE: To Provide in depth knowledge of mobile systems devices and communication systems. To develop skills of finding solution and building software for mobile computing applications.

UNIT I:

INTRODUCTION:

Mobility of bits and bytes – Wireless – The beginning – Mobile computing – Dialogue control – Networks – middleware and gateways – application and services – developing mobile computing applications – security in mobile computing – standards -standards 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 considerations for mobile computing – Mobile computing through internet – Making existing applications mobile enabled.

UNIT II:

MOBILE COMPUTING THROUGH TELEPHONY:

Evolution of telephony – Multiple access procedures – Satellite communication systems – Mobile computing through telephone – Developing an IVR application – Voice XML – Telephony application programming interface(TAPI) – Computer supported telecommunications applications.

EMERGING TECHNOLOGIES:

Introduction-Bluetooth – radio frequency identification(RFID) – Wireless broadband(WIMAX)-mobile IP-internet protocol version 6(IPV6)-Java card.

UNIT III:

GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS:

Global system for mobile communications-GSM architecture-GSM entities-call routing in GSM-PLMN interfaces-GSM addresses and identifiers-network aspects in GSM-mobility management-GSM frequency allocation-personal communications service-authentication and security.

SHORT MESSAGE SERVICE (SMS):

Mobile computing over SMS-short message service(SMS)-value added services through SMS-accessing the SMS bearer.

UNIT IV:

GENERAL PACKET RADIO SERVICE (GPRS):

Introduction-GPRS and packet data network-GPRS network architecture-GPRS network operations-data services in GPRS-applications for GPRS- limitations of GPRS-billing and charging in GPRS-enhanced data rates for GSM evolution (EDGE)

WIRELESS APPLICATION PROTOCOL(WAP):

Introduction-WAP-MMS-GPRS applications.

UNIT V:

CDMA AND 3G:

Introduction-spread-spectrum technology-IS-95-CDMA versus GSM-wireless data-third generation networks-applications on 3G.

WIRELESS LAN:

Introduction-wireless LAN advantages-IEEE 802.11 standards-wireless LAN architecture-mobility in wireless LAN-deploying wireless LAN-mobile ad hoc networks and sensor networks-wireless LAN security-wireless access in vehicular environment-wireless local loop-hyper LAN — WIFI versus 3G.

Text book:

Title	**:** Mobile computing
Author	**:** Asoke k talukder,Hasan ahmed,Roopa r yavagal
Publisher	**:** Mc Graw Hill
Edition	**:** Second
Year	**:** Reprint 2013

Chapters: (Relevant topics only)

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

Reference book:

Title	**:**Mobile computing
Author	**:**Rajkamal
Publisher	**:**Oxford University Press(RS)
Edition	**:**Second

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code No:EMS41/51	
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 to client/server computing-What is client/server computing-Benefits of client/server computing-Evolution of C/S computing-Hardware trends-Software trends-Evolution of operating systems-Networking (N/W) trends-Business considerations

Unit – II

Overview of C/S Applications: Components of C/S Applications-Classes of C/S Applications-Categories of C/S Applications. Understanding C/S Computing: Dispelling of myths -Obstacles-Upfront &Hidden-Open systems & Standards-Standard-Setting Organizations-Factors for success.

Unit-III

The client hardware and software: Client Component-Client operating Systems-what is GUI-Database Access-Client Software Products: GUI Environments –Converting 3270/5250 Screens-Database Tools-Client Requirements-GUI Design Standards-Interface Independence-Testing Interfaces.

Unit-IV

The Server: Categories of Servers –Features of Server Machines-Classes of Server machines-Server Environment: N/W Management Environment-N/W computing Environments-Extensions-Network Operating System-Loadable Module.

Unit-V

Server operating system: OS/2 2. 0-Windows new technology-Unix based OS-Server requirements: Platform independence-Transaction processing-Connectivity-Intelligent database-Stored procedure-Triggers-Load leveling-Optimizer-Testing and diagnostic tools-Backup & recovery mechanisms.

Text Book:

Title **:** Client/Server Computing
Author **:** Dawna Travis Dewire
Publisher **:** Tata McGraw Hill
Year **:** 1994
Chapters:
Unit I - 1, 2
Unit II - 3, 4
Unit III - 5. 1, 5. 2, 5. 3, 5. 5, 6. 1, 6. 2, 6. 3, 7. 1, 7. 2, 7. 3, 7. 4
Unit IV - 8. 2, 8. 3, 8. 4, 9. 2, 9. 3, 9. 4, 9. 5, 9. 6
Unit V -10. 1, 10. 2, 10. 3, 11. 1, 11. 2, 11. 3, 11. 4, 11. 5, 11. 6, 11. 7, 11. 8, 11. 9, 11. 11

Reference:

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

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(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code	**:** EMS41/51
Class	: II/III Year	No of Hrs allotted	: 5
Semester	: IV/V	No of credits	: 5
Title of Paper	: Artificial Intelligence		
Paper	: Elective – I/II		

Course Objective

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

Unit – I

Understanding AI

Introduction to AI – The problem , assumptions, AI technique, level of the model, criteria for success problems, production systems, production system characteristics, issue in the design of search programs.

Unit – II

Heuristic Searching Techniques

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

Unit – III

Knowledge Representation issues and predicate logic

Representation and mappings – approaches, issue in knowledge representation, frame problem.

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

Unit – IV

Knowledge and representation rules

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

Unit – V

Symbolic reasoning

Introduction and logic for non monotonic reasoning, implementation issues, implementation of DFS, breadth – first search.

Text book

Title	:	Aritificial Intelligence
Author	:	Elaine Rich
Publisher	:	Tata McGraw Hill Ltd
Edition	:	Third
Year	:	Ninth reprint 2012

UNIT	**CHAPTERS**
I	1.1 TO 1.5, 2.1, 2.5
II	3.1 TO 3.6
III	4.1 TO 4.4, 5.1 TO 5.5
IV	6.1 TO 6.5
V	7.1 TO 7.6

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2017 Batch Onwards)

Course	: B.Sc. Computer Science	Code No	:
Class	: III		
Semester	: V	No. of Hrs allotted	:--
Paper	: **Self Study Paper**	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	**:** Twelth
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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Computer science

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DEPARTMENT OF COMPUTER SCIENCE

Syllabus for M.Sc. Computer Science

COURSE STRUCTURE (With Effect from 2014 – 2016 Batch onwards)

Semester –I

Type of Paper	Code No	Subject	Contact hours /weeks	Credit	Total No of hours Allotted	Max. Marks CA	Max. Marks SE	Total
Core 1	S1PS1	C++ and Data Structures	5	5	75	25	75	100
Core 2	S1PS2	Distributed Operating Systems	5	5	75	25	75	100
Core 3	S1PS3	Advanced RDBMS	5	5	75	25	75	100
Core 4	S1PS4	Discrete Mathematics	4	4	60	25	75	100
Elective -I	S1PSE1	Elective Paper –I	4	5	60	25	75	100
Lab	S1PSL1	C++ and Linux – Lab	4	2	60	40	60	100
Lab	S1PSL2	RDBMS –Lab	3	2	45	40	60	100
		Total	**30**	**28**	**450**	**205**	**495**	**700**

Semester –II

Type of Paper	Code No	Subject	Contact hours /weeks	Credit	Total No of hours Allotted	Max. Marks CA	Max. Marks SE	Total
Core 5	S2PS1	Dot Net Technology	5	5	75	25	75	100
Core 6	S2PS2	Network Security	5	5	75	25	75	100
Core 7	S2PS3	Advanced Java	5	5	75	25	75	100
Elective -II	S2PSE2	Elective Paper –II	4	5	60	25	75	100
Lab	S2PSL1	Dot Net Programming –Lab	6	2	90	40	60	100
Lab	S2PSL2	Advanced JAVA Programming-Lab	5	2	75	40	60	100
		Total	**30**	**24**	**450**	**180**	**420**	**600**

Semester –III

Type of Paper	Code No	Subject	Contact hours /weeks	Credit	Total No of hours Allotted	Max. Marks CA	Max. Marks SE	Total
Core 8	S3PS1	Data Mining and Warehousing	5	5	75	25	75	100
Core 9	S3PS2	Web Technologies	5	5	75	25	75	100
Core 10	S3PS3	Software Project Management	5	5	75	25	75	100
Elective - III	S3PSE3	Elective Paper –III	4	5	60	25	75	100
Lab	S3PSL1	Open Source Tools –Lab	6	3	90	40	60	100
Lab	S3PSL2	Web Programming –Lab	5	3	75	40	60	100
		Total	**30**	**26**	**450**	**180**	**420**	**600**

Semester –IV

Type of Paper	Code No	Subject	Contact hours /weeks	Credit	Total No of hours Allotted	Max. Marks CA	Max. Marks SE	Total
Core 11	S4PS1	Multimedia Technology	5	4	75	25	75	100
Core 12	S4PS2	Advanced Computing	5	5	75	25	75	100
PJ	S4PSPJ	Project Work	20	3	-	40	60	100
		Total	**30**	**12**	**150**	**90**	**210**	**300**

A) Consolidation of Contact Hours and Credits : PG

Semester	Contact Hrs / Week	Credits
I.	**30**	**28**
II.	**30**	**24**
III.	**30**	**26**
IV.	**30**	**12**
Total	**120**	**90**

B) Curriculum Credits

Core --- 75Credits
Elective --- 15 Credits

Total 90 Credits

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DEPARTMENT OF COMPUTER SCIENCE

Syllabus for M.Sc. Computer Science

Effect from 2014-2016 Batch onwards

First Semester

	Subjects	Elective
1.	C++ and Data Structures	Elective - I
2.	Distributed Operating Systems	
3.	Advanced RDBMS	
4.	Discrete Mathematics	
5.	C++ and Linux – Lab	
6.	RDBMS - Lab	

Second Semester

	Subjects	Elective
1.	Dot Net technology	Elective - II
2.	Network Security	
3.	Advanced JAVA	
4.	Dot Net Programming – Lab	
5.	Advanced JAVA Programming - Lab	

Third Semester

	Subjects	Elective
1.	Data Mining and Warehousing	Elective - III
2.	Web Technologies	
3.	Software Project Management	
4.	Open Source Tools – Lab	
5.	Web Programming - Lab	

Fourth Semester

	Subject	Project
1.	Multimedia Technology	(Major Project) (4 Months Industrial Project)
2.	Advanced Computing	

List of Electives

1) Computer Architecture and Parallel Processing
2) Artificial Neural Networks
3) Digital Image Processing
4) Bio-Informatics
5) Parallel Computing
6) Computer Simulation and Modeling
7) Distributed Systems
8) Real Time and Embedded Systems
9) Soft Computing
10) Mobile Computing
11) Pervasive Computing
12) Compiler Design
13) Design and Analysis of Algorithms
14) Bluetooth Technology

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 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++
   Author:- Herbert Schildt (Tata McGraw Hill, Third Edition,1999)
2. Data Structures, Algorithms and Applications in C++
   Author:- Sartaj Sahni (McGraw-Hill International Edition,2000)

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,Fourth edition, 2001)
2. Fundamentals of Data Structures
   - Ellis Horowitz Sartaj Sahni (Computer Science Press,1983)

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 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 Distributes 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)

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.

Unit II:

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 is 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.

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.

Text Book:

Distributed Operating Systems Concepts and Design,
Author: Pradeep.K.Sinha, PHI, First Edition ,1998

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.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 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: Advanced RDBMS

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
   Author: Abraham Silberschatz, Henry F. Korth, S. Sudarshan (Tata McGraw-Hill), 6th Edition, 2011
2. Oracle 8: The Complete Reference
   Author: George Koch, Kevin Loney (McGraw-Hill),2000

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)
3. The Complete Reference SQL -James R. Groff and Paul N. Weinberg (McGraw-Hill)

THIAGARAJAR COLLEGE, MADURAI – 9.

(Re-Accredited with 'A' Grade by NAAC)

DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PS4
Semester	: First	No. of hours allotted	: 4Hrs
Paper	: Core (4)	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)

Set theory: Introduction – Sets – Notation and Description of Sets – Subsets – Venn-Euler Diagram .

Relations: Cartesian product – Relations– Operations on Relations – Equivalence Relation.

Unit-II: (Functions)

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

Unit III: (Graph theory)

Basic concepts – Matrix representation of Graphs – Trees.

Unit IV: (Finite Automata)

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

Unit-V : (Regular Expressions & Pumping Lemma)

Regular expressions – Moore and Mealy machines-The pumping Lemma for regular sets.

Text Books:

1. Discrete Mathematics by Dr. M.K. Venkataraman, Dr. N. Sridharan and Author: N. Chandrasekaran (The National Publishing Company,2003)
2. Introduction to Automata theory, Languages and Computation by John. E. Hopcroft, Author:Jeffery d. Ullman (Narosa Publications, 15th Reprint, 1997)

Chapters:

Unit I (From Text Book 1): Chapter 1: 1 to 5 Chapter 2: 1 ,2,4,5
Unit II (From Text Book 1): Chapter 3: 1 to 3
Unit III (From Text Book 1): Chapter 11: 1 to 4.
Unit IV (From Text Book 2): Chapter 2: 1 to 4.
Unit V (From Text Book 2): Chapter 2: 5,7, Chapter-3: 1

Reference Books:

1. Discrete Mathematics – Schaum's outline series (second 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 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PSL1
Semester	: First	No. of hours allotted	: 4 Hrs
Paper	: Lab	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 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S1PSL2
Semester	: First	No. of hours allotted	: 3 Hrs
Paper	: Lab	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 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PS1
Semester	: Second	No. of hours allotted	: 5 Hrs
Paper	: Core (5)	No. of Credits	: 5

Title of the Paper: 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.

Unit – I

Introduction to .NET - .NET Defined – The .NET Framework - Visual Basic .NET. VB6 and VB .NET Differences – Data Type Changes- Arrays- Operators- User Defined Types- Null Values, Variables- Procedures- Properties- Control Flow- Form-based Application Changes- Application Types- Data Access- Object Oriented Programming and VB .NET – Encapsulation- Inheritance, Polymorphism - Data Types, Variables, and Operators – Arrays –Conditional Logic.

Unit –II

Procedures - Dialog Boxes – Introduction to Dialog Boxes- File IO and System Objects – Directory object - Error Handling –Namespaces –Classes and Objects –Multithreading.

Unit –III

Data Access – Introduction to Data Access in .NET - ADO.NET - Data Access in Visual Studio .NET – Visual Studio .NET Database Tools, Visual Studio .NET and ADO.NET - Visual Studio .NET and XML - Manipulating XML in Code - Windows Forms – Introduction to System.Windows.Form - Controls – Specific Controls – Base Controls, Derived Controls, Display Controls, Dialog Controls, Miscellaneous Controls.

Unit –IV

"Visual" Inheritance – Irregular Forms – Other Namespaces and Objects in the Catalog – Introduction to Web Development - Introduction to ASP.NET - Page Framework – HTML Server Controls.

Unit –V

Web Controls – Validation Controls –User Controls –Events – Cascading Style Sheets –State Management – ASP.NET Applications – Creating Web Application, Deleting an Application, global.aspx, Understanding web config.

Text Book:

"Visual Basic .NET Programming",

Author: Bill Evjen, Jason Beres, et al, Wiley India Publication, 2002 **Chapters 1-15, 21-41.**

Reference Books:

1. G.AndrwDuthie , Microsoft ASP .NET Programming with Microsoft Visual C# .NET step by step , PHI ,2003.

2. Steven Holzner, Visual Basic .NET Programming Black Book , Dreamtech Press.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PS2
Semester	: Second	No. of hours allotted	: 5
Paper	: Core(6)	No. of Credits	: 5

Title of the Paper: Network Security

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 Chiper 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 – Authetication Requirements – Authentication Functions – Message Authentication Codes – Hash Function – Security of Hash Function and MACS.

Unit – III: Hash Algorithm

MD5 Mssage Digest Algorithm – Secure Hash Algorithm – RIPEMD-1 , 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
   Author: William Stallings (Pearson Education, Third Edition, 2002)

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 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S2PS3
Semester	: Second	No. of hours allotted	: 5 Hrs
Paper	: Core (7)	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
   Author:Herbert Schildt (Tata McGraw-Hill, Fifth Edition,2002)
2. Core Java 2 Volume II – Advanced Features
   -Author:Cay S. Horstmann, Gary Cornell (Sun Microsystems Press,2000)

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,2000)
2. Database Programming with JDBC and Java
   - George Reese (O'Reilly,1997)

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

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

Title of the Paper: Dot NET Programming - Lab

Implement the following using VB.NET

1. Creating and using Variables, Arrays and Structure
2. Creating and using Procedures
3. Using Decision Structures
    a. Checking User Input b. Confirming Application Close
4. Implementing Structured Exception Handling
5. Creating Menus , Status Bars and Toolbars
6. Create and open a connection to a database using ADO.NET
7. Create, read, update, and delete records in a database using ADO.NET

B. Implement the following using ASP.NET

1. Create a master page to serve as a template for the Web site's pages.
2. Create a admin page with an editable master-detail view for browsing, inserting, updating, and deleting records.
3. Create a simple web site
4. Create and open a connection to a database using ADO.NET
5. Create, read, update, and delete records in a database using ADO.NET
6. Use SqlDataSource to populate a Dropdown List and Grid View
7. Use ObjectDataSource to Populate a Grid View
8. Create a feedback form.

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

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

Title of the Paper: Advanced Java Programming - Lab

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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 Servlets.
11. Programs to demonstrate JDBC.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PS1
Semester	: Third	No. of hours allotted	: 5 Hrs
Paper	: Core (8)	No. of Credits	: 5

Title of the Paper: Data Mining and Warehousing

Course Objectives:

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

Unit-I

Introduction – Data mining – Data mining functionalities – kinds of patterns can be mined – classification – Data mining task primitives-major issues. Data pre-processing – Data cleaning – Data Integration and Transformation – Data Reduction – Discretization and concept hierarchy generation

Unit-II

Data warehouse – A multidimensional data model – Data warehouse architecture – Data warehouse implementation – From data warehouse to data mining-Efficient methods for data Cube computation.

Unit-III

Mining Frequent Patterns, Associations and Correlations: Basic Concepts-Efficient and scalable Frequent Itemset Mining Methods-Mining Various kinds of association rules-from association Mining to correlation analysis-constraint-based Association Mining. Classification and prediction – Issues regarding classification and prediction – classification by decision tree induction- Bayesian classification- Rule based classification.

Unit-IV

Cluster Analysis – Types of Data in cluster analysis- A categorization of Major clustering methods - Partitioning methods- Hierarchical methods – Density – based methods -Grid based methods -Model based clustering methods – outlier analysis.

Unit-V

Mining Data Streams-Mining Time-Series Data-Mining Sequence patterns in Transactional Data Bases-Multimedia Data Mining-Text Mining-Mining the World Wide Web.

Text Book

1. "Data Mining Concepts and Techniques",
   Author: Jiawei Han, Michelien Kamber, Morgan Kaufmann Publishers an Imprint of Elsevier, 2006.

Chapters: 1,2,3, 4.1, 5, 6.1- 6.6, 7.1-7.8, 7.11,8.1-8.3, 10.3-10.5

Reference Book:

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

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PS2
Semester	: Third	No. of hours allotted	: 5 Hrs
Paper	: Core (9)	No. of Credits	: 5

Title of the Paper: Web Technologies

Course Objectives:

It provides web programming using JavaScript and PHP

Unit I:

Fundamentals of JavaScript:

Capabilities of JavaScript- Structures of JavaScript code - Data and Objects-Tokens, Operators, Expressions and Statements - The JavaScript math Objects - Comparison Operations and decision making Structures - Loop Structures.

Arrays in JavaScript:

Basic Array Properties-Some operations On Arrays-Creating Two Dimensional Arrays-Using Arrays to Access the Contents Of Forms-Hiding the Contents of a JavaScript Script.

Unit II:

JavaScript Functions:

The purpose of Functions - Defining JavaScript Functions-Using JavaScript Functions with HTML Forms-Some Global Methods and Event Handlers-Recursive Functions-Passing Values from One Document to Another.

PHP:

Getting Started – Data Types – Variables – Constants - Documents- Operations- Arrays-Conditional Statements-Iterations.

Unit III:

Functions in PHP:

User Defined Functions -Built In Functions- PHP Server Variables- Working With Date and Time-Performing Mathematical operations-Working with string Functions.

Working With Forms:

Form Elements-Adding Elements to a Form

Unit IV:

Regular Expressions:

Regular Expressions Engine- Common Users of regular Expressions-Types Of regular Expressions-Regular Expressions Functions.

My SQL:

PHP My SQL Architecture - Creating Table - Connecting to My SQL -Selecting the Database - Inserting data - Extracting data - Updating data - Deleting data - Closing the database Connection - PHP and My SQL Interaction using a form.

Unit V:

Cookies and Sessions:

An Introduction to Cookies - Creating Cookies Using PHP - An Introduction to session-Sessions Variables - PHP Session Functions.

XML:

An Introduction to XML - What XML Does-Difference between XML and HTML.

Text Book:

1. An Introduction to HTML and JavaScript
   Author: David R.Brooks (Springer International Edition, 2007)
2. PHP 5.1 for Beginners
   Author: Ivan Bayross and Sharanam Shah (Shroff Publishers and Distributors Pvt. Ltd.)
   First edition, 2006

   Chapters:
   Unit I: Chapters 4 and 5 from Textbook 1
   Unit II: Chapters 6 from Textbook 1
   Chapters 5 and 6 from Textbook 2
   Unit III: Chapters 7 and 8 from Textbook 2
   Unit IV: Chapters 9 and 11(Relevant Topics) from Textbook 2
   Unit V: Chapters 21 and 22(Relevant Topics) from Textbook 2

Reference 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. Web Standards Programmer's Reference: HTML, CSS, JavaScript, Perl, Python & PHP
- Steven M. Schafer (Wiley Dreamtech)

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PS3
Semester	: Third	No. of hours allotted	: 5 Hrs
Paper	: Core (10)	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. 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 – Rish 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 – Mote Carlo simulation – Critical chain concepts.

Unit IV:

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.

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.

Unit V:

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.

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.

Text Book:

Software Project Management,

Author: Bob Hughes and mike Cotterell, Tata Mc Grawhill Fourth edition ,2007

Chapters:

Unit – I: 1, 3
Unit – II: 4, 5
Unit – III: 6 , 7
Unit – IV: 8 , 9
Unit – V: 10, 11

Reference:

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

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PSL1
Semester	: Third	No. of hours allotted	: 6 Hrs
Paper	: Lab	No. of Credits	: 3

Title of the Paper: Open Source Tools Lab

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1. **OPEN SOURCE TOOL -1 : Data Mining Tool**
    - 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 : Research Document Tool**

3. **OPEN SOURCE TOOL-3: S/w Testing Tool**

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	: S3PSL2
Semester	: Third	No. of hours allotted	: 5 Hrs
Paper	: Lab	No. of Credits	: 3

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 get user input from Forms and store in Database.
8. Programs to demonstrate cookies.
9. Programs to demonstrate Sessions.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course : M.Sc. Computer Science Code No : S4PS1

Semester : Fourth No. of hours allotted: 5 Hrs

Paper : Core(11) No. of Credits : 4

Title of the Paper: Multimedia Technology

Course Objectives:

It provides an understanding of various multimedia elements.

Unit – I:

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 – II:

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.

Unit – III:

Developing Multimedia Titles

Steps in Developing Interactive multimedia - The planning phase – The Creating Phase – The Testing phase

Designing for multimedia

Basic Design Principles – Designing for interactivity – Guidelines for interactive design

Unit - IV :

Managing Multimedia Projects

Management issues of multimedia Development – The management process and multimedia projects

Distributing Multimedia titles

Distributing Multimedia Titles on CD-ROM – Distributing Multimedia Titles Online - Kiosk-based Multimedia

Unit - V :

Multimedia on Web

Multimedia on the World Wide Web – Design Considerations for Multimedia on the Internet

Issues and trends in Multimedia

Copyright Issues – Privacy Issues – Censorship Issues –Trends in Multimedia Industry

Text Books:

1. Multimedia in Action - Author: James E. Shuman(Cengage Learning), First edition, 1997

Chapters:

Unit – I: 1, 2 from Text book
Unit – II: 3, 4, 5 from Text book
Unit – III: 6,7 from Text book
Unit – IV: 8,10 from Text book
Unit –V : 11,12 from Text book

Reference Books:

1. Multimedia Technology and Applications - David Hillman (Galgotia Publications Pvt. Ltd.)

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DEPARTMENT OF COMPUTER SCIENCE
(From 2014-2016 Batch onwards)

Course : M.Sc. Computer Science Code No : S4PS2
Semester : Fourth No. of hours allotted: 5 Hrs
Paper : Core(12) No. of Credits : 5
Title of the Paper: Advanced Computing

Course Objectives:

It Provides Recent Trend in Advanced Computing. It deals with Gird WSRF specifications and Cloud Services.

Unit-I: Introduction: Early Grid Activities-Current Grid Activities-Grid Applications
Grid Computing Organizations and Their Roles: Guidelines GCF-Organizations Developing Grid Computing Toolkits and Framework

Unit-II: Grid Computing Architecture: Grid Architecture –Grid Architecture and Relationship to other Distributed Technologies-Service Oriented Architecture and Grid –Semantics Grids. Merging the Grid Services Architecture with the Web Services Architecture: Service Oriented Architecture –Web Service Architecture –XML Messages and Enveloping-Relationship between Web Service and Grid Service

Unit-III: OGSA: Introduction –OGSA Architecture and Goal-
OGCA Basic Services: CMM-Service Domains-Security Architecture-Distributed Data Access and Replication

Unit-IV: Fundamentals of Cloud Computing Fundamentals – Shot history of cloud computing – Cloud Architecture – Cloud Storage – Cloud Service – Pros and Cons of cloud computing – Benefits from cloud computing.

Unit-V: Cloud Services Need for Web-Based Application – The cloud Service Development – Cloud Service Development Types – Cloud Service development tools.

Text Books:

1."Grid computing",
Author: Joshy Joseph, Craig Fellenstein - Pearson,2003 (Units I, II & III)
2."Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online", Que, .
Author: Kai Hwang ,Faye A.Briggs,2008 (Units IV & V)

References Books:

1. Fran Berman, Geoffrey Fox, J.G. Anthony Hey, "Grid Computing: Making the Global Infrastructure a reality", John Wiley & sons, 2003.
2. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson Education, 2004.
3. Hmar Abbas, "Grid Computing: A Practical Guide to technology and Application Charles River media, 2003.

LIST OF ELECTIVES

1) Computer Architecture and Parallel Processing
2) Artificial Neural Networks
3) Digital Image Processing
4) Bio-Informatics
5) Parallel Computing
6) Computer Simulation and Modeling
7) Distributed Systems
8) Real Time and Embedded Systems
9) Soft Computing
10) Mobile Computing
11) Pervasive Computing
12) Compiler Design
13) Design and Analysis of Algorithms
14) Bluetooth Technology

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course : M.Sc. Computer Science Code No :
Semester : No. of hours allotted: 4 Hrs
Paper : Elective (1) No. of Credits : 5
Title of the Paper : Computer Architecture and Parallel Processing

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Course objective:

It provides an overview of the Computer Architecture and the functionality of parallel processing.

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.

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.

UNIT-II

Central Processing Unit: General Register and Stack Organization - Instruction formats - Addressing Modes - Data Transfer and Manipulation - Program Control - RISC - Pipelining - Arithmetic, Instruction and RISC Pipelining - Vector Processing - Array Processor.

UNIT-III

Input-Output organization - Peripheral devices - I/O Interface - Asynchronous Data Transfer - Modes of Transfer - Priority Interrupt - DMA - I/O Processor - Serial Communication - Memory Organization - Memory Hierarchy - Auxiliary Memory - Associative Memory and Virtual Memory

UNIT-IV

Introduction to Parallel Processing: Trends towards parallel processing –Parallel Processing Mechanisms –Parallel Computer Structures-Architectural Classification Schemes-Parallel Processing Applications

UNIT-V

Structures and Algorithms for Array Processors : SIMD Array Processors –SIMD Interconnection Networks-Parallel Algorithms for Array Processors.

Multiprocessor Architecture and Programming: Functional Structures-Parallel Memory Organizations-Multiprocessing Control and Algorithms: Inter process Communication Mechanisms-Parallel Algorithms for Multiprocessors

Text Books

1. Digital Computer Fundamentals –
   -T.C.Baartee (Tata McGraw Hill Sixth Edition,2000)
2. V.C. Hamacher, G. Vranesic, S.G. Zaky
   - Computer Organisation, TMG, Fifth Edtion, 2007
3. Kai Hwang ,Faye A.Briggs
   -Computer Architecture and Parallel Processing ,MGH,2005

Reference

1. Nicholas Carter, "Computer Architecture", TMG, 2006.
2.J.P.Hayes, Computer Architecture, McGraw Hill, 1988'
3. Selim G.AKL - The Design and Analysis of parallel Algorithms - PHI.

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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 Hrs	
Paper	: Elective (2)	No. of Credits	: 5

Title of the Paper: Artificial Neural Networks

Course objective:

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

Unit I

INTRODUCTION: History of Neural Networks - Structure and Function if a single neuron - Neural Net Architectures – Neural Network Uses –Evaluation of Networks - Implementation

Unit II

SUPERVISED LEARNING: Preceptors – Linear Separability -Perception Training Algorithm –Support vector Classification. Multilevel Discrimination-Back propagation algorithm-Classification using backprogation-Applications

Unit III

UNSUPERVISED LEARNING : Winner-Take-All Networks-Counter propagation Networks-Topologically Organized Networks-Distance-based Learning-Principal Component Analysis Networks

Unit IV

ASSOCIATIVE LEARNING: Non-iterative Procedures for Association-Hopfield Networks-Brain-State-in-a-Box Network – Hetero Associators

Unit V

EVOLUTIONARY OPTIMIZATION: Optimization and Search –Evolutionary Computation-Evolutionary Algorithms for Training Neural Networks-Learning the Architecture –Hybrid Evolutionary Approaches

Text Books:

1.Kishan Mehrotra , Chilukuri K.Mohan, Sanjay Ranka ,"Elements of Artificial Neural Networks",RRI Penram International Publishing Pvt.Ltd,1997

Reference Books: "Introduction to the theory of Neural Computation", - J.Hertz, A.Krogh., and R.G. Palmer, Addison – Wesley

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted	: 4 Hrs
Paper	: Elective (3)	No. of Credits	: 5

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,2001)

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

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Course : M.Sc. Computer Science Code No :
Semester : No. of hours allotted: 4 Hrs
Paper : Elective (4) No. of Credits : 5
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 – Closing Methodology – DNA Sequencing & PCR.

Patients – Profiles & Properties

Amino Acids – Protein Structure – Secondary Structure Elements – Territory Structure – Quaternary Structure – Protein Folding – Protening 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 Penalities 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,2003)

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 Hrs
Paper	: Elective (5)	No. of Credits	: 5

Title of the Paper: Parallel Computing

Course Objectives:

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

Unit – I:

Parallel Computer Models

Multiprocessors and Multi computers – Multi vector 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 Multi computers.

Text Book:

1. Advanced Computer Architecture Parallelism, Scalability, Programmability - Kai Hwang (Tata McGraw-Hill, 2010)

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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Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted	: 4 Hrs
Paper	: Elective (6)	No. of Credits	: 5

Title of the Paper: Computer Simulation and Modeling

Course Objectives:

It provides a detailed understanding of the system models and its various types of simulation procedures.

Unit – I:

System Models:

Concepts of a System-system Environment-stochastic activities-continuous and discrete system-system modeling-types of models-static physical models –dynamic physical models-static mathematical models-principles used in modeling.

System Studies:

Subsystems-Corporate Model-environment segment-production segment-management segment-full corporate model-types of system study-system analysis-system design-system postulation.

Unit – II:

System simulation:

Techniques of simulation-Monte Carlo Method-Comparison of simulation and analytical methods-experimental nature of simulation-types of system simulation-numerical computation technique for continuous models-numerical computation technique for discrete models-distributed log models-progress of simulation study.

Unit – III:

Continuous system simulation:

Continuous System Models-Differential Equations-Analog Computers-Analog Methods-Hybrid Computers-Digital-Analog Simulators-Continuous System Simulation Languages-CSMP III-Hybrid simulation-Feedback Systems-Simulation of an Autopilot-Interactive Systems-Real-Time Simulation.

Unit – IV:

System Dynamics:

Historical Background-Exponential Growth Models-Exponential Decay Models-Modified Exponential Growth Models-Logistic Curves-Generalization of Growth Models-System Dynamics Diagrams-Simple System Dynamics Diagrams-Multi-segment Models-Representation of Time Delays-Feedback in Socio-Economic Systems-Biological Example-World Models-Dynamo language.

Unit – V:

Discrete system simulation:

Discrete events-representation of time- Generation of Arrival patterns- simulation of a telephone system- delayed calls-simulation programming tasks- gathering statistics-counters and summary statistics-measuring utilization and occupancy- recording distributions and transit times-discrete simulation languages.

Text Book:

1. System Simulation-GEOFFREY GORDON, PHI, Second Edition,2001.

References:

1. Bernard Zeigler, Herbert Praehofer, Tag Gon Kim, .*Theory of Modeling and Simulation*., Academic Press
2.. Narsing Deo, .*System Simulation with Digital Computer.*, PHI
3. Donald W. Body, .*System Analysis and Modeling*., Academic Press Harcourt India

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Course : M.Sc. Computer Science | Code No :
Semester : | No. of hours allotted: 4 Hrs
Paper : Elective (7) | No. of Credits : 5
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),2006.

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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Course	: M.Sc. Computer Science	Code No	:
Semester	:	No. of hours allotted	: 4 Hrs
Paper	: Elective (8)	No. of Credits	: 5

Title of the Paper: Real Time and Embedded Systems

Course Objectives:

It provides a detailed understanding of RTOS and Embedded Software Development Processes and Tools

Unit -I :

INTRODUCTION: Introduction to Embedded systems – Processor and memory organization

Unit- II :

Devices and Networks: Devices and buses for Device Networks – Device drivers and Interrupt servicing mechanism.

Unit-III :

Embedding and Modeling Concepts: Programming Concepts and Embedded Programming in C,C++ and java -
Program Modeling Concepts.

Unit-IV:

RTOS: Real-Time Operating Systems –Real time Operating System Programming-I: Microc/OS-II and VxWorks

Unit V

Embedded Software Development Process and Tools: Introduction to Embedded software development process and Tools –Host and Target Machines-Linking and Locating Software-Getting Embedded Software into the Target System-Issues in Hardware-software Design and Co-design.

Text Book(s)

1. Raj Kamal, 'Embedded Systems Architecture, Programming and Design', Tata Mc-Graw-Hill.2008.

References

1. R.J.A.Buhr, D.L.Bailey, "An Introduction to Real Time Systems: Design to networking with C/C++", Prentice- Hall, International, 1999.

2. Grehan Moore and Cyliax, "Real Time Programming: A guide to 32 Bit Embedded Development Reading: Addison- Wisley-Longman", 1998.

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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 Hrs
Paper	: Elective (9)	No. of Credits	: 5
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.1996.

2.George J. Klir and Bo Yuan, "Fuzzy Sets and Fuzzy Logic-Theory andApplications", 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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(From 2014-2016 Batch onwards)

Course : M.Sc. Computer Science Code No :
Semester : Third No. of hours allotted: 4 Hrs
Paper : Elective (10) 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

Mobile computing Architecture: History of computers – History of Internet – Internet - The Ubiquitous Network – Architecture for Mobile computing – Three-tier Architecture – Design consideration for mobile

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

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

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 - wireless LAN Security – WiFi versus 3G Internet networks and Internetworking :Introduction – fundamentals of call processing – Intelligence in the networks – soft switch – 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 computring-Tomasz imielinski, Henry F.Korthkluwer Academic Publishers.
2. Mobile Computing-CSR Prabhu, Universities Press,2002.

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Course	: M.Sc. Computer Science	Code No	:
Semester	: Third	No. of hours allotted: 4 Hrs	
Paper	: Elective (11)	No. of Credits : 5	

Title of the Paper: Pervasive Computing

Course Objectives:

It Provides Recent Trend in Pervasive Computing. It deals with various device technology and connectivity ,WAP services and PDA Services for pervasive applications

Unit- I: Pervasive Computing: Past, Present and Future Pervasive Computing-Pervasive Computing Market-m-Business-Application examples: Retail, Airline check-in and booking-Sales force automation-Health care-Tracking-Car information system-E-mail access via WAP

Unit –II: Device Technology: Hardware-Human Machine Interfaces-Biometrics-Operating Systems-Java for Pervasive devices

Unit-III: Device Connectivity: Protocols-Security-Device Management Web Application Concepts: WWW architecture-Protocols-Transcoding-Client authentication via internet

Unit- IV :WAP and Beyond: Components of the WAP architecture-WAP infrastructure-WAP security issues-WML-WAP push-Products-i-Mode-Voice Technology: Basics of Speech recognition- Voice Standards-Speech applications-Speech and Pervasive Computing

Unit –V: PDA: Device Categories-PDA operation Systems-Device Characteristics-Software Components-Standards-Mobile Applications-PDA Browsers Pervasive Web Application architecture: Background-Scalability and availability-Development of Pervasive Computing web applications-Pervasive application architecture

Text Book(s)

1. Pervasive Computing, Technology and Architecture of Mobile Internet Applications, Jochen Burkhardt, Horst Henn, Stefan Hepper, Thomas Schaech & Klaus Rindtorff, Pearson Education,2006.

References Books:

1. Fundamentals of Mobile and Pervasive Computing, Frank Adelstein, Sandeep KS Gupta, Golden Richard III, Loren Schwiebert, McGraw Hill edition, 2006

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DEPARTMENT OF COMPUTER SCIENCE
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Course	: M.Sc. Computer Science	Code No	:
Semester	: Third	No. of hours allotted: 4 Hrs	
Paper	: Elective (12)	No. of Credits : 5	

Title of the Paper: Compiler Design

Course Objectives:

It provides a detailed understanding of data structures, the significance of sorting, searching techniques and how the files are maintained during compilation.

Unit I : Introduction

Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens

Unit II: Basic Data Structures

Role of the parser, Writing Grammars – Context – Free Grammars – Top Down parsing – Recursive Descent parsing – Predictive parsing – bottom –up parsing – shift Reduce Parsing – Operator Precedent Parsing – LR Parsers – SLR Parser – Canonical LR Parser – LALR Parser

Unit III: Advanced Data Structures

Intermediate Languages – Declarations – Assignment Statements – Boolean Expressions – Case Statements – Back patching – procedure calls .

Unit IV: Sorting & Searching Techniques

Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next use Information – A simple Code generator – DAG representation of Basic Blocks – Peephole optimization

Unit V: Files

Introduction – Principal Sources of Optimization – Optimization of basic Blocks – Introduction to Global Data Flow Analysis – Runtime Environments – Source Language issues – Storage Organization – Storage Allocation strategies – Access to non-local names – Parameter Passing

Text Book(s)

1. Alfred Aho, Ravi Sethi, Jeffy D.Ullman, "Compilers – Principles, Techniques and Tools", Pearson Education Asia, 2003.

Reference Books:

1. Henk Alblas and Albert Nymeyer, "Practice and Principles of Compiler Building with C", PHI, 2001

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Course	: M.Sc. Computer Science	Code No	:
Semester	: Third	No. of hours allotted: 4 Hrs	
Paper	: Elective (13)	No. of Credits : 5	

Title of the Paper: Design and Analysis of Algorithms

Course Objectives:

It provides a detailed understanding of designing methods and the algorithms used to analyze the database structure.

Unit-I:

Introduction – Notion of Algorithm - Fundamentals of algorithmic problem solving – Important problem types – Fundamentals of the analysis of algorithm efficiency – analysis frame work – Mathematical analysis of non-recursive Algorithms – Non-recursive solution to the Matrix Multiplication - Mathematical analysis of recursive algorithms – Recursive solution to the Tower of Hanoi Puzzle.

Unit-II :

Divide and conquer Technique – Multiplication of large integers – Strassen's matrix multiplication – Closest pair and Convex Hull Problems - Greedy method – Prim's algorithm – Kruskal's algorithm – Dijkstra's algorithm.

Unit-III :

Computing a binomial coefficient – Warshall's and Floyd' Algorithm – Application of Warshall's Algorithm to the digraph – Flyd's Algorithm for the all pairs shortest paths Problem - The Knapsack problem and Memory function.

Unit-IV: Backtracking – N-Queens problem – Hamiltonian circuit problem – Subset sum problem – Branch and bound – Assignment problem – Knapsack problem – Traveling salesman problem.

Unit-V :P & NP problems – NP-complete problems – Approximation algorithms for NP-hard problems – Traveling salesman problem – Knapsack problem.

Text Book

1. AnanyLevitin "Introduction to the Design and Analysis of Algorithms" Pearson Education 2008. (Chapters 1.1-1.3, 2.1, 2.3, 2.4, 4.5, 4.6, 8.2, 8.4, 9.1-9.3, 11.3, 12.1,12.2, 12.3)

Reference Books

1. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, "Introduction to algorithms", Prentice Hall 1990.
2. S.K. Basu, "Design methods and Analysis of Algorithms", Prentice Hall, 2005.

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014-2016 Batch onwards)

Course : M.Sc. Computer Science Code No :
Semester : No. of hours allotted: 4 Hrs
Paper : Elective (14) No. of Credits : 5
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 (Tata McGraw-Hill),2001.

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 (Thomson Course Technology)

THIAGARAJAR COLLEGE, MADURAI – 9.

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2015 Batch Onwards)

Course : COP
Code **:** CS1
Class : I Year
No of Hrs allotted : 2
Semester : I & II
No of credits :
Title of the Paper: Web Designing
Paper : Certificate Course

Unit – I

Introduction to the Internet and Internet Technologies

Computers in Business – Networking – Internet – Electronic Mail (E-Mail) – Resource Sharing – Gopher – World Wide Web – Usenet – Telnet – Bulletin Board Service – Wide Area Information service – Modem – Internet Addressing – Physical Connections – Telephone Lines.

Unit – II

Internet Browsers and Introduction to HTML

Internet Explorer – Netscape Navigator – Designing a Home page – History of HTML – HTML Generation – HTML Documents – Anchor Tag – Hyper Links – Sample HTML Documents.

Unit – III

Head and Body Sections and Designing the Body Section

Header Section – Title – Prologue – Links – Colorful Web Page – Comment Lines – Some Example HTML Documents – Heading Printing – Aligning the Heading – Horizontal Rule – Paragraph – Tab Settings – Images and Pictures – Embedding PNG Format Images.

Unit – IV

Ordered and Unordered Lists and Table Handling

List – unordered List – Heading in a List – Ordered Lists – Nested Lists – Tables – Table Creation in HTML – Width of the Table and Cells – Cells Spanning Multiple Rows / Columns – Coloring Cells – Column Specification – Some Sample tables

Unit – V

DHTML and Style Sheets and Frames

Defining Styles – Elements of Styles – Linking a Style Sheet to an HTML Document – In – Line Style – External Style Sheets – Internal Style Sheets – Multiple Styles – Frameset Definition – Frame Definition – Nested Framesets.

Text Books:

Title **:** World Wide Web Designing with HTML
Author : C.Xavier
Publisher : Tata McGraw Hill
Year : reprint 2010

Chapters(Relevant Topics Only)

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

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DEPARTMENT OF COMPUTER SCIENCE

(From 2014 – 2015 Batch Onwards)

Course	: COP	Code	**:** CSL1
Class	: I Year	No of Hrs allotted	: 2
Semester	: I & II	No of credits	:

Title of the Paper: Web Designing Lab

Paper : Certificate Course

List of Programs

Simple HTML Program

- Web Page Designing with Heading and Font Tags.
- Web Page Designing with <HR> and Marquee Tag.

Hyperlinks

- Web Page Designing to demonstrate the Link between different Documents.
- Web Page Designing to demonstrate the Link within the same Document.
- Web Page Designing with anchor tag with different TARGET values.

Tables

- Design a Bio-Data with Table.
- Web Page Designing to implement the Concepts of Table Tags.

Forms

- Design a Web Page using Form Attributes.
- Design a Web Page with Form Controls and Table.

Image Map

- Create a Web Page using Image Map.

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DEPARTMENT OF COMPUTER SCIENCE
(From 2014-2015 batch onwards)

Advanced Diploma in WebDesigning

Advanced Web Technologies

UNIT-I:

Introduction to JSP: The Problem with Servelet. 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 Programmming-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

(From 2014-2015 batch onwards)

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