E.M.G. YADAVA WOMEN'S COLLEGE, MADURAI – 625 014.
(*An Autonomous Institution – Affiliated to Madurai Kamaraj University*)
Re-accredited (**3rd Cycle**) with Grade **A+** & **CGPA 3.51** by NAAC

DEPARTMENT OF COMPUTER APPLICATIONS

CBCS SYLLABUS

BACHELOR OF COMPUTER APPLICATIONS

PROGRAMME CODE - J

COURSE STRUCTURE

(w.e.f. 2017 – 2018 onwards)

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)
Re-accredited (3rd Cycle) with Grade A+ & CGPA 3.51 by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS-UG

COURSE STRUCTURE - SEMESTER WISE

(w.e.f. 2017–2018 Batch onwards)

Sem	Part	Sub. Code	Title of the paper	Teaching hrs(per week)	Duration of Exam (hrs)	Marks allotted			Credits
						C.A	S.E	Total	
1	I	171T1	Part I - Tamil	6	3	25	75	100	3
	II	172E1	Part II - English	6	3	25	75	100	3
	III	17J11	Core - Programming in C	4	3	25	75	100	4
	III	17J1P	Core - Programming in C Lab	5	3	40	60	100	3
	III	17ACJ1	Allied I – Financial Accounting	5	3	25	75	100	5
	IV	17SEJ1P	Skill Based I – Office Automation Lab	2	2	40	60	100	2
	IV	17NMJ1	PC – Software (NME)	2	2	25	75	100	2
2	I	171T2	Part I - Tamil	6	3	25	75	100	3
	II	172E2	Part II - English	6	3	25	75	100	3
	III	17J21	Core - Object Oriented Programming with C++	4	3	25	75	100	4
	III	17J2P	Core - Object Oriented Programming with C++ Lab	5	3	40	60	100	3
	III	17AMJ2	Allied II – Resource Management Techniques	5	3	25	75	100	5
	IV	17SEJ2P	Skill Based II – Linux Lab	2	2	40	60	100	2
	IV	17NMJ2	Animation Using Flash (NME)	2	2	25	75	100	2
3	I	171T3	Part I - Tamil	6	3	25	75	100	3
	II	172E3	Part II - English	6	3	25	75	100	3
	III	17J31	Core – Digital Principles & Computer Organization	4	3	25	75	100	3
	III	17J32	Core – Java Programming	4	3	25	75	100	4
	III	17J3P	Core – Java Programming Lab	3	3	40	60	100	3
	III	17AMJ3	Allied III - Graph Theory	5	3	25	75	100	5
	IV	17SEJ3P	Skill Based III - Multimedia Lab	2	2	-	-	100	2
4	I	171T4	Part I - Tamil	6	3	25	75	100	3
	II	172E4	Part II - English	6	3	25	75	100	3
	III	17J41	Core - Data Structures and Computer Algorithms	4	3	25	75	100	3
	III	17J4P	Core - Data Structures and Computer Algorithms Lab	3	3	25	75	100	3
	III	17J42	Core – Relational Database Management System	4	3	40	60	100	4
	III	17AMJ4	Allied IV - Numerical Methods	5	3	25	75	100	5
	IV	17SEJ4P	Skill Based IV – RDBMS Lab	2	2	-	-	100	2

5	III	17J51	Core – Operating System	5	3	25	75	100	4
	III	17J52	Core – Data Communication and Computer Networks	6	3	25	75	100	4
	III	17J53	Core – Dot Net Programming	5	3	25	75	100	4
	III	17J5P	Core – Dot Net Programming Lab	5	3	40	60	100	3
	III		**Elective I**	5	3	25	75	100	5
	IV	17SEJ5P	Skill Based V – Networking Lab	2	2	-	-	100	2
	IV	174EV5	Environmental Studies	2	2	-	-	100	2
6	III	17J61	Core – Software Engineering	5	3	25	75	100	4
	III	17J62	Core - Web Technology	6	3	25	75	100	4
	III	17J6P	Core – Web Technology Lab	5	3	40	60	100	3
	III		**Elective II**	5	3	25	75	100	5
	III	17JPR6	**Elective III (Project)**	5	3	20	80	100	5
	IV	17SEJ6P	Skill Based VI - Android Lab	2	2	-	-	100	2
	IV	174VE6	Value Education	2	2	-	-	100	2
	PART V	175NS4 / 175PE4	N.S.S / Physical Education	-	2	-	-	-	1
			Total	180				-	140

Elective I
Semester - V (Choose any one)

1. Computer Graphics - 17JE5A
2. Enterprise Resource Planning - 17JE5B

Elective II
Semester - VI (Choose any one)

1. Data Mining - 17JE6A
2. Compiler Design - 17JE6B

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited (3rd Cycle) with Grade A^+ & CGPA 3.51 by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Title of the Paper : Core - Programming in C
Semester : I **Contact Hours : 4**
Sub Code : 17J11 **Credits : 4**

Objectives:

To develop the basic programming language concepts in C.

Unit: I

Overview of C: History of C – Importance of C. **Constants, Variables and Data Types:** Introduction – Character Set – C Tokens – Keywords and Identifiers – Constants – Variables – Data Types - Declaration of Variables – Declaration of Storage Class – Assigning Values to Variables - Defining Symbolic Constants – Declaring a Variable as Constant -Declaring a Variable as Volatile – Overflow and Underflow of Data. **Operators and Expressions:** Introduction – Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators – Increment and Decrement Operators - Conditional Operators - Bitwise Operators - Special Operators.

Unit: II

Managing Input and Output Operations: Introduction - Reading a Character - Writing a Character – Formatted Input - Formatted Output. **Decision Making and Branching:** Introduction – Decision Making with If Statement – Simple If Statement – The If…. Else statement – Nesting of If …. Else Statements – The Else If Ladder – The Switch Statement – The ?: Operator – The Goto Statement. **Decision Making and Looping:** Introduction - The while Statement – The do Statement – The for Statement – Jumps in Loops.

Unit: III

Arrays: Introduction – One-Dimensional Arrays – Declaration of One-Dimensional Arrays – Initialization of One-Dimensional Arrays – Two-Dimensional Arrays – Initializing Two-Dimensional Arrays – Multi-Dimensional Arrays – Dynamic Arrays – More about Arrays. **Character Arrays and Strings:** Introduction – Declaring and Initializing String Variables – Reading Strings from Terminal - Writing Strings to Screen – Arithmetic Operations on Characters – Putting Strings Together – Comparison of Two Strings – String-Handling Functions – Table of Strings.

Unit: IV

User-Defined Functions: Introduction – Need for User-Defined Functions – A Multi-Function Program – Elements of User-Defined Functions – Definition of Functions – Return Values and Their Types – Function Calls – Function Declaration - Category of Functions – No Arguments and No Return Values –Arguments and but No Return Values - Arguments with Return Values – No Arguments and but Returns a Value – Functions that Return Multiple Values - Nesting of Functions – Recursion – Passing Arrays to Functions – Passing Strings to Functions – The Scope, Visibility and Lifetime of Variables – Multifile Programs.

Structures and Unions: Introduction - Defining a Structure – Declaring Structure Variables – Accessing Structure Members – Structure Initialization – Copying and Comparing Structure Variables – Operations on Individual Members – Arrays of Structures – Arrays within Structures – Structures within Structures – Structures and Functions – Unions – Size of Structures – Bit Fields.

Unit: V

Pointers: Introduction – Understanding Pointers - Accessing the Address of a Variable – Declaring Pointer Variables - Initialization of Pointer Variables – Accessing a Variable through its Pointer – Chain of Pointers – Pointer Expressions – Pointer Increments and Scale Factor – Pointers and Arrays – Pointers and Character Strings – Array of Pointers – Pointers as Function Arguments – Functions Returning Pointers – Pointers to Functions – Pointers and Structures.

Annexure - 14

File Management in C: Introduction – Defining and Opening a File - Closing a File – Input/Output Operations on Files – Error Handling during I/O Operations – Random Access to Files – Command Line Arguments.

Text Book:

1. Balagurusamy. E, *Programming in ANSI C*, Tata McGraw Hill Education Pvt. Ltd., 6th Edition, 2012.

Chapters:

Unit – I : 1.1, 1.2, 2, 3.1 to 3.9

Unit – II : 4, 5, 6.1 – 6.5

Unit – III : 7, 8.1 – 8.9

Unit – IV : 9, 10

Unit – V : 11.1 – 11.16,12

Reference Books :

1. Ashok Kamthane.N, *Programming in C* , Pearson Education, India, 2nd Edition, 2006.
2. Brian Kernighan.W & Dennis Ritchie, *C Programming Language*, Prentice Hall Publications, New Delhi, 2nd Edition, 1998.
3. Byron Gottfried, *Programming with C* ,TMH Publications, New Delhi, 2nd Edition, 1996.
4. Paul Deitel & Harvey Deitel, *C How to Program*, Prentice Hall Publications, New Delhi, 2nd Edition,1998.
5. Venugopal K.R. & Sudeep Prasad.R, *Programming with C*, TMH Publications, New Delhi, 1st Edition, 2000.

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited (3rd Cycle) with Grade A+ & CGPA 3.51 by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Title of the Paper : Core - Programming in C Lab
Semester : I **Contact Hours : 5**
Sub Code : 17J1P **Credits : 3**

---

1. Display the following:
   (i) Floyd's triangle (ii) Pascal Triangle

2. Generate the following series of numbers:
   Armstrong numbers between 1 to 100
   Prime numbers between 1 to 50
   Fibonacci series up to N numbers

3. Manipulate the strings with following operations.
   (i) Concatenating two strings (ii) Reversing the string (iii) Finding the Substring (iv) Replacing a string (v) Finding length of the string

4. Find the summation of the following series:
   (i) Sine (ii) Cosine (iii) Exponential

5. Create the sales report for M sales person and N products using two dimensional array.

6. Simulate following Banking operations using functions.
   (i)Deposit (ii) Withdrawal (iii) Balance Enquiry

7. Implement using recursion
   (i) Find the solution of Towers of Hanoi problem using recursion.
   (ii) Fibonacci number generation. (iii) Factorial

8. Generate Student mark sheets using structures.

9. Create a collection of books using arrays of structures and do the following:
(i) Search a book with title and author name (ii) Sorts the books on title.

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited (3rd Cycle) with Grade A^+ & CGPA 3.51 by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

ALLIED PAPER - I

Title of the Paper : Financial Accounting
Semester : I **Contact Hours : 5**
Sub Code : 17ACJ1 **Credits : 5**

Objectives:

1. To provide a thorough knowledge of the fundamental concepts in Financial Accounting.
2. To train the students to ascertain and reveal the net result of the operations of a business.

UNIT : I

Accounting - Definition – Objectives- Advantages – Limitations – Accounting Concepts and Conventions – Accounting Rules – Journal - Ledger .

UNIT : II

Subsidiary Books – Meaning – Advantages – Preparation of Purchase Book- Sales Book- Purchases Returns Book- Sales Returns Book.

UNIT : III

Cash Book - Single Column Cash Book – Double Column Cash Book –Triple Column Cash Book – Petty Cash Book - Trial Balance – Objectives – Preparation of Trial Balance.

UNIT : IV

Rectification of Errors – Classification – Errors of Omission - Errors of Com**m**ission - Errors of Principle – Compensating Errors –Suspense Account (Simple Problems only)

Annexure - 14

UNIT : V

Final Accounts for Sole Trading Concerns – Trading Account - Profit and Loss Account – Balance Sheet. (Simple adjustments only)

NOTE: The Question paper shall cover 20% theory and 80% problem.

Text Book:

1. Jain.S.P & Narang.K.L, *Financial Accounting,* Kalyani Publishers, New Delhi, 2012.

Chapters

Unit - I **:** Pg: 1-6 / 15-24 / 44-65 / 73-82

Unit – II **:** Pg: 143 -153

Unit – III **:** Pg: 103 - 128 / 82-86

Unit – IV **:** Pg: 163 - 172

Unit – V **:** Pg: 223 - 232 / 245- 255

BOOKS FOR REFERENCE

1. Arulanandam.M.A. & Raman.K.S, *Advanced Accounts*, Himalaya Publishing House, Mumbai , 2012.
2. Gupta.R.L. & Radhaswamy.M, *Advanced Acountancy*, Sultan Chand & Sons, New Delhi, 2010.
3. Pillai R.S.N. & V.Bagavathy , *Fundamentals of Advanced Accounting* , S.Chand & Co, New Delhi, 2013.
4. Ramasamy.T, Financial Accounting, Gold Books Publishing House, 2012
5. Reddy.T.S. & Murthy.A., *Advanced Accountancy,* Margham Publisher, 6th Edition, 2007 .

.

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited (3rd Cycle) with Grade A^+ & CGPA 3.51 by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Skill Based Elective – I

Title of the Paper : Office Automation Lab
Semester : I **Contact Hours : 2**
Sub Code : 17SEJ1P **Credits : 2**

List of Programs:

MS-WORD:

1. Create a word document to prepare an application form (College, Bank, etc)
2. Create a student mark sheet using table, find out the total & average marks and display the result.
3. Design an invitation of your department function using different fonts, font sizes, bullets and Word Art / Clip Art.
4. Open a word document to prepare your Resume by performing the following operations.
   (a) Formatting the Text-Alignment & Font style
   (b) Page setup (margin alignment, page height & width)

MS-POWERPOINT:

1. Create a power point presentation from template.
2. Prepare a power point presentation using Auto Wizard and see its various views.
3. Prepare a power point presentation with audio and video effect.
4. Prepare a power point presentation using bar graph and chart.

MS-EXCEL:

1. Entering information, moving copying, inserting and deleting rows and columns.
2. Formatting worksheet, printing worksheet.
3. Editing cells using commands and functions.
4. Enhancing charts using statistical, mathematical and financial functions.

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited (3rd Cycle) with Grade A+ & CGPA 3.51 by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Non Major Elective – I

Title of the Paper : PC – Software
Semester : I **Contact Hours: 2**
Sub Code : 17NMJ1 **Credits : 2**

Objective:

To make the students to understand the concepts and techniques in MS Office and to enhance the skill in Office Automation.

Unit: I

Introduction to Word: Starting Word – Creating a Document – Saving the Document in a Disk File – Printing a Document. **Editing a Document:** Editing a Document – Selecting Text – Deleting Text – Replacing Text – Undoing and Redoing Changes. **Formatting Text and Paragraph:** Formatting Text – Using the Font Dialog Box – Paragraph Formatting – Using Bullets and Numbering in Paragraphs.

Unit: II

Finding and Replacing Text and Spelling Checking: Finding Text – Spelling Checking and Correction – Checking Grammar – Using the Thesaurus. **Enhancing Document:** Page Setup – Adding Borders and Shading to Paragraph – Opening and Closing Toolbars – Using Headers and Footers in the Document – Print Preview. **Columns, Tables and Other Features:** Creating Tables in Documents – Formatting a Table – Using Table AutoFormat to Format a Table.

Unit: III

Getting Started with Excel: Starting Excel – The Excel Screen – Organisation of the Worksheet Area – Entering Information in a Worksheet – Entering Numbers(Values) – Entering a Formula – Advantages of Using a Formula – Entering More Data – Saving a Worksheet.

Unit: IV

Editing Cells and Using Commands and Functions: Excel Functions – What is a Range? - Using a Range with SUM. **Printing the Worksheet:** Printing the Worksheet – Using Print Preview – Setting Up Page and Margins – Defining Header and Footer – Changing Margins and Page Setup in the Preview Mode – Scaling the Worksheet on the Print Page – Print Options and Setting Up the Printer – Advanced Print Options.

Unit: V

Creating Charts: Using ChartWizard to Create a Chart – Changing the Chart Type – Resizing and Moving the Chart – Changing the Chart Type to Pie – Displaying a 3-D Column Chart – Controlling the Appearance of a Chart – Modifying and Deleting a Chart – Creating a Chart on a Chart Sheet – Printing Charts.

Text Book:

1. Taxali R.K., *"PC Software For Windows",* Tata McGraw Hill Publishing Company Limited, 1998.

Chapters:

Unit – I : 8.4 to 8.7, 9.3 to 9.7, 11.1 to 11.4

Unit - II : 12.2, 12.4, 12.9, 12.10, 14.1, 14.3 to 14.6, 15.1 to 15.3

Unit – III : 20

Unit – IV : 21.3 to 21.5, 24

Unit - V : 25

Reference Books:

1. Bangia & Learnig, *Ms Office XP,* Kanna Book Publishing Co.(P) Ltd., 2nd Revised Edition.
2. Dinesh Maidasani, *MS Office 2000*, Laxmi Publications Pvt. Ltd., New Delhi, 2nd Edition, 2007.
3. Nellai Kannan.C, *MS Office*, Nels Publications, India, 4th Edition, 2008.
4. Pat Coleman, *Windows XP from A to Z*, Laxmi Publications, New Delhi, 1st Edition, 2007.
5. Stephen L. Nelson, *The Complete Reference Office 2000*, Tata McGraw Hill Publishing Company Limited, 2000.

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Title of the Paper : Object Oriented Programming with C++

Semester : II **Contact Hours : 4**

Sub Code : 17J21 **Credits : 4**

Objectives:

To acquire knowledge on Object Oriented concepts and develop programming skills in C++ language.

Unit: I

Principles of Object-Oriented Programming : Basic concepts of Object-Oriented Programming - Benefits of OOP – Object-Oriented Languages – Application of OOP. **Tokens , Expressions and Control Structures :** Introduction - Tokens – Keywords – Identifiers and Constants – Basic Data Types – User –Defined Data Types – Storage Classes - Derived Data Types – Symbolic Constants – Type Compatibility – Declaration of Variables – Dynamic Initialization of Variables – Reference Variables – Operators in C++ - Scope Resolution Operator – Member Dereferencing Operators – Memory Management Operators – Manipulators – Type Cast Operator.

Unit: II

Functions in C++ : Introduction - The Main Function – Function Prototyping – Call by Reference – Return by Reference – Inline Functions – Default Arguments – Const Arguments – Recursion - Function Overloading – Friend and Virtual Functions – Math Library Functions. **Classes and Objects :** Introduction – Specifying a Class – Defining Member Functions – A C++ Program with Class – Making an Outside Function Inline – Nesting of Member Functions – Private Member Functions – Arrays within a

Class – Memory Allocation for Objects – Static Data Members – Static Member Functions - Arrays of Objects – Objects as Function Arguments – Friendly Functions.

Unit: III

Constructors and Destructors : Introduction – Constructors – Parameterized Constructors – Multiple Constructors in a Class – Constructors with Default Arguments – Dynamic Initialization of Objects – Copy Constructor – Dynamic Constructors – Constructing Two Dimensional Arrays – Const Objects – Destructors. **Operator Overloading and Type Conversion :** Introduction – Defining Operator Overloading – Overloading Unary Operators – Overloading Binary Operators – Manipulation of Strings using Operators – Rules for Overloading Operators .

Unit: IV

Inheritance : Extending Classes : Introduction – Defining Derived Classes – Single Inheritance – Making a Private Member Inheritable – Multilevel Inheritance – Multiple Inheritance - Hierarchical Inheritance – Hybrid Inheritance – Virtual Base Classes. **Pointers, Virtual Functions and Polymorphism :** Introduction – Pointers – Pointers to Objects – this Pointer - Virtual Functions – Pure Virtual Functions .

Unit: V

Managing Console I/O Operations : Introduction – C++ Streams – C++ Stream Classes – Unformatted I/O Operations , Formatted Console I/O Operations – Managing Output with Manipulators . **Working with Files :** Introduction – Classes for File Stream Operations – Opening and Closing a File – Detecting end-of-file – More about Open(): File Modes – File Pointers and their Manipulations – Sequential Input and Output Operations – Updating a File : Random Access – Error Handling during File Operations - Command-line Arguments.

Annexure - 14

Text Book:

1.Balagurusamy.E , *Object Oriented Programming with C++* ,
McGraw Hill Education (India) Private Limited, New Delhi, 6th Edition, 2013.

Chapters :

Unit – I : 1.5, 1.6 , 1.7 , 1.8 , 3.1 – 3.19

Unit – II : 4.1 – 4.12 , 5.1 , 5.3 – 5.15

Unit – III: 6.1 - 6.11, 7.1 -7.4 , 7.6 , 7.8

Unit – IV: 8.1 – 8.9, 9.1 – 9.4 , 9.6 , 9.7

Unit – V : 10.1 – 10.6 , 11.1 – 11.10

Reference Books:

1. Herbert Schildt, *C++:The Complete Reference* , TMH Publications, New Delhi, 4th Edition, 2003.
2. Mike McGrath, *C++ Programming in easy steps*, Dreamtech Press, New Delhi, 3rd Edition, 2011.
3. Radha Ganesan P., *Programming with C++,* Scitech Publications, 1st Edition, 2002.
4. Ravichandran D., *Programming with C++*, TMH Publications, New Delhi, 2nd Edition, 2002.
5. Vijayasankari S., Object *Oriented Programming in C++,* Shanlax Publications, 1st Edition, 2015.

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A^+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Title of the Paper	**: Object Oriented Programming with C++ Lab**		
Semester	**: II**	**Contact Hours**	**: 5**
Sub Code	**: 17J2P**	**Credits**	**: 3**

List of Programs:

C++ Programs:

1) Function Overloading
2) Constructor
3) Matrix Multiplication
4) Single Inheritance
5) Multiple Inheritance
6) Multilevel Inheritance
7) Hierarchical Inheritance
8) Virtual Function
9) Binary Search
10) Operator Overloading

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Skill Based Elective – II

Title of the Paper	**: Linux Lab**		
Semester	**: II**	**Contact Hours**	**: 2**
Sub Code	**: 17SEJ2P**	**Credits**	**: 2**

List of Programs:

1. Using shell script to add all the numbers given as arguments.
2. Using shell script that checks if the argument is a prime number or not.
3. Using script to determine whether a year is leap or not.
4. Using shell script to perform the following string operations,
   - To extract a sub string from a given string.
   - To find the length of a given string.
5. Using shell script to find the factorial of a given number.
6. Using shell script to list the entire directory files in a directory.
7. Using shell script that displays a list of all files in the current directory to which the user has read and execute permissions.
8. Using shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
9. Using awk script to find the number of lines in a file that do not contain vowels i or o.
10. Using awk script to find the number of characters, words and lines in a file.

Annexure - 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 onwards)

Non Major Elective – II

Title of the Paper : Animation Using Flash
Semester : II **Contact Hours : 2**
Sub Code : 17NMJ2 **Credits : 2**

Objective:

To make the students to understand the concepts and techniques in Animation Using Flash.

Unit: I

Introduction: Discovering Flash - Understanding What You Can Create with Flash5 - Getting the Right Start - Tooling Around the Toolbar - Conceiving Your First Animation - Flashy Drawings - Making Graphics Move.

Unit: II

Your Basic Flash: Looking at the Big Picture - Setting the Stage - Grabbing a Graphic - Understanding Vectors and Bit Maps - Finding Graphics - Going to the Library - Sharing Libraries.

Unit: III

Getting Graphic: Sharpen Your Pencil - Creating Shapely Shapes - Mixing and Matching Shapes - Creating Curves With the Pen - Getting Artistic With the Brush - A Rainbow Of Colors.

Unit: IV

You Are The Object Editor: Selecting Objects - Moving, Copying and Deleting-Editing Fills.

Unit: V

Annexure - 14

Getting Animated: Preparing To Animate - Animating With Keyframes - Editing Animation.

Text Book:

1. Gurdy Leete & Ellen Finkelstein, *Flash 5 For Dummies*, IDG Books India (P) Ltd., 1st Edition, 2000.

Chapters:

Unit - I : 1
Unit - II : 2
Unit - III : 3
Unit - IV : 4
Unit - V : 9

Reference Books:

1. Drew, *Fundamentals of Multimedia*, Prentice – Prentice Hall of India, New Delhi, 2008.
2. Ethan Watrall & Norbert Herber, *Flash MX SAVVY*, BPB Publications, New Delhi.
3. Michael Hurwicz & Laura McCabe, *Special Edition Using Macromedia Flash MX*, QUE Publications, 2002.
4. Robert Reinhardf & Snow Dowd, *Flash 8-Bible*, Wiley Publications Reprint-2006.
5. Shalini Gupta & Aditya Gupta, *Flash 8*, Dream Tech Press, New Delhi, 3rd Edition, 2006.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper	**:**	**Digital Principles & Computer Organization**	
Semester	**:**	**III**	**Contact Hours: 4**
Sub Code	**:**	**17J31**	**Credits : 3**

Objectives:

To acquire knowledge about electronic circuits and number systems used in computers.

Unit- I

Digital Logic: The Basic Gates – NOT, OR, AND - Universal Logic Gates – NOR, NAND-AND, OR Invert Gates. **Number Systems and Codes:** Binary Number System –Radix Representation of Numbers- Binary to decimal Conversion-Fixed point Representation-Decimal to binary Conversion-Octal Numbers-Hexadecimal Numbers-The ASCII code – The Excess-3 Code – The Gray code.

Unit-II

Combinational Logic Circuits: Boolean Laws and Theorems. - Sum of Products Method - Truth table to Karnaugh Map – Pairs, Quads, Octets –Karnaugh Simplification- Don't Care Conditions- Product-of sums Method -Product-of sums Simplifications-Five variable karnaugh Map. **Data Processing Circuits:** Multiplexers – Demultiplexers-1-of-16 Decoder – BCD-to-decimal Decoders – Seven-segment Decoders – Encoders – Exclusive-OR Gates- Parity Generators and Checkers.

Unit -III

Arithmetic Circuits: Binary Addition- Binary Subtraction -**Flip-Flops:** RS Flip Flops-Gated Flip-Flops-Edge triggered RS Flip Flops- Edge triggered D Flip Flops- Edge triggered JK Flip Flops-JK Master Slave Flip Flops.

Unit -IV

Basic Computer Organization and Design: Instruction codes - Computer Registers - Computer Instructions - Timing and Control - Instruction Cycle: Fetch and Decode –Determine the Type of Instruction- Register Reference Instructions. **Micro programmed Control:** Control memory - Address sequencing- Micro program Example: Computer Configuration- micro instruction format - symbolic microinstructions – Fetch Routine-symbolic micro program - binary micro program.

Unit-V

Central Processing Unit: General Register Organization - Stack Organization - Instruction Formats - Addressing Modes - Data Transfer and Manipulation - Program Control- Reduced Instruction Set Computer (RISC) – **Pipeline and Vector Processing:** Parallel Processing – Pipelining. **Input-output organization:** Peripheral devices – Input –Output Interface –Direct Memory Access (DMA)-DMA Controller-DMA Transfer-**Memory organization:** Memory hierarchy - Main Memory - Auxiliary Memory.

Text Book

1. Donald P Leach, Albert Paul Malvino & Goutam Saha, *Digital Principles and Applications*, McGraw-Hill Education, 8th Edition, 2015.

Chapters :

Unit I: 2.1 to 2.3, 5.1 to 5.10

Unit II: 3.1 to 3.9, 4.1 to 4.8

Unit III: 6.1, 6.2 , 8.1 to 8.5 , 8.8

2. M. Morris Mano, *Computer System Architecture,* Pearson Education, 3rd Edition, 2007.

Chapters :

Unit IV: 5.1 to 5.5 and 7.1 to 7.3

Unit V: 8.2 to 8.8, 9.1, 9.2, 11.1, 11.2, 11.6 and 12.1 to 12.3

Annexure – 14

Reference Books:

1. Rajaraman V. & Radhakrishnan T., *Computer Organization and Architecture,* PHI Learning, 5th Edition Print, 2015.
2. Carl Hamacher, Zvonko Vranesic & Safwat Zaky, *Computer Organization,* McGraw Hill Education, 5th Edition, 11th reprint, 2015.
3. Floyd & Jain, *Digital Fundamentals,* Pearson Education, 8th Edition, 2009.
4. Godse A.P., *Digital Principles and System Design*, Technical Publications, 1st Edition, 2009.
5. William Stallings, *Computer Organization & Architecture*, Prentice Hall of India, 7th Edition, 2008.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)
Re-accredited **(3rd Cycle)** with Grade **A^+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper	**: JAVA Programming**	
Semester	**: III**	**Contact Hours : 4**
Sub Code	**: 17J32**	**Credits : 4**

Objectives:

To inculcate knowledge on Java Programming concepts and enable to create wide range of Applications and Applets using Java.

Unit-I

Overview of Java Language: Introduction-Basic concepts of OOPs - Java Features – Simple Java Program-Java program Structure-Implementing a Java Program-Java Virtual Machine-Command Line Arguments. **Constants, Variables & Data types**: Introduction-Constants-Variables-Data Types-Declaration of Variables-Giving Values to Variables-Scope of Variables-Symbolic Constants-Type Casting-Getting Values of Variables-Standard Default Values. **Operators and Expressions:** Introduction-Arithmetic Operators-Relational Operators – Logical Operators –Assignment Operators -Increment and Decrement Operators-Conditional Operator –Bitwise Operators -Special Operators-Arithmetic Expressions-Evaluation of Expressions-Precedence of Arithmetic Operators-Type Conversions in Expressions-Operator precedence and Associativity-Mathematical functions.

Unit-II

Decision Making and Branching: Introduction-Decision making with if statement-Simple if Statement-The if…Else statement-Nesting of if…Else Statements-The Else if Ladder-Switch statement-The ? : Operator. **Decision Making and Looping**: Introduction-while Statement-do Statement-for Statement-Jumps in Loops-Labeled Loops. **Classes, Objects and Methods**: Introduction-Defining a Class-Fields Declaration-Method of Declaration-Creating Objects-Accessing Class Members-Constructors-Method Overloading-Static Members-Nesting

of Methods-Inheritance: Extending a Class-Overriding Methods-Final Variables and Methods-Final classes-Finalizer Methods-Abstract Methods and Classes-Visibility control.

Unit-III

Arrays, Strings and Vectors: Introduction-One-dimensional Arrays-Creating An Array-Two-dimensional Arrays-Strings-Vectors-Wrapper Classes-Enumerated types. **Interfaces: Multiple Inheritances**: Introduction-Defining Interfaces-Extending Interfaces-Implementing Interfaces-Accessing Interface Variables. **Packages: Putting Classes Together:** Introduction-Java API Packages-Using System packages-Naming Conventions-Creating Packages-Accessing a Package-Using a Package-Adding a Class to a Package-Hiding Classes-Static Import.

Unit-IV

Multithreaded Programming: Introduction-Creating Threads-Extending the thread Class-Stopping and Blocking a Thread-Life Cycle of a Thread-Using Thread Methods-Thread Exceptions-Thread Priority-Synchronization-Implementing the 'Runnable' Interface-Inter-thread Communication. **Managing Errors and Exceptions:** Introduction-Types of errors-Exceptions-Syntax of Exception Handling Code-Multiple catch Statements-Using Finally Statement-Throwing our own Exceptions-Using Exceptions for Debugging.

Unit-V

Applet Programming: Introduction-How Applets Differ from Applications-Preparing to Write Applets-Building Applet Code-Applet Life Cycle-Creating an Executable Applet-Designing a Web page-Applet tag-Adding Applet to HTML File-Running the Applet-More about Applet tag-Passing parameters to Applets-Aligning the Display-More about HTML tag-Displaying Numerical values-Getting Input from the user-**Managing Input/output Files in Java**: Byte Stream classes-Character stream classes- Other Stream classes.

Text Book:

1. E. Balagurusamy, *Programming with JAVA*, TMH Publication, New Delhi, 5th Edition, 2015.

Chapters:

Unit-I : 1.1,1.3,2.2,3.2,3.5,3.9,3.10,3.11,4.1 to 4.11,5.1 to 5.15

Unit-II : 6.1 to 6.8, 7.1 to 7.6, 8.1 to 8.16, 8.18

Unit-III : 9.1 to 9.8, 10.1 to 10.5, 11.1 to 11.11

Unit- IV : 12.1 to 12.11, 13.1 to 13.7, 13.9

Unit -V : 14.1 to 14.16, 16.4, 16.5, 16.17

Reference Books:

1. Hari Mohan Pandey, *Java Programming*, Pearson Education, 1st Edition, 2012.
2. Ken Arnold, David Holmes, *The Java Programming Language*, Pearson Education, 3rd Edition, 2008.
3. Laura Lemay & Rogers Cadenhead, *Sams Teach Yourself Java 2*, Sams TechMedia, 1st Edition, 2000.
4. Herbert Schildt, The Complete Reference Java 2, 5th Edition, 2002.
5. Danny Goodman, *Java Script Bible*, WILEY - Dreamtech India Pvt. Ltd., India, 4th Edition, 2005.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper	**: JAVA Programming Lab**	
Semester	**: III**	**Contact Hours: 3**
Sub Code	**: 17J3P**	**Credits : 3**

Objectives:

To build software development skills using java programming for real world applications.

List of Programs:

1. Print prime numbers
2. Single Inheritance
3. Multiple Inheritance
4. Function over loading
5. Function Overriding
6. Array
7. Matrix multiplication
8. Interface
9. Packages.
10. Exception Handling
11. Multithread program
12. Appending a Files
13. Login Authentication
14. Marquee of Text
15. Mouse Event
16. Display an Image
17. Display a ListBox
18. Creating a MenuBar
19. Draw a figure using Graphics.
20. Display a different Shape.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Skill Based Elective - III

Title of the Paper : Multimedia Lab
Semester : III **Contact Hours: 2**
Sub Code : 17SEJ3P **Credits : 2**

Flash:

1. Procedure to create an animation to represent the growing moon.
2. Procedure to create an animation to indicate a ball bouncing on steps.
3. Procedure to simulate movement of a cloud.
4. Procedure to draw the fan blades and to give proper animation.
5. Procedure to display the background given (filename:tulip.jpg) through your name.
6. Procedure to create an animation with the following features.
7. Procedure to simulate a ball hitting another ball.
8. Procedure to create an animated cursor using startdrag("ss",true); mouse.hide();
9. Procedure to change a circle into a squre using flash.
10. Procedure to display the background given (filename:garden.jpg) through your name using mask.

Photoshop:

1. Procedure to design a visiting card containing atleast one graphic and text information.
2. Procedure to take a photographic image. give a title for the image. put the border. Write your names. Write the name of institution and place.
3. Procedure to prepare a cover page for the book in your subject area. plan your own design.
4. Procedure to extract the flower only from given photographic image and organize it on a background. Selecting your own background for organization.

5. Procedure to adjust the brightness and contrast of the picture so that it gives an elegant look.

6. Procedure to position the picture preferably on a plain background of a colour of your choice - positioning includes rotation and scaling.

7. Procedure to remove the arrows and text from the given photographic image 8. Procedure to type a word and apply the effects shadow emboss

9. Procedure to use appropriate tool(s) from the toolbox, cut the objects from 3 files (f1.jpg, f2.jpg & f3.jpg); organise them in a single file and apply feather effects.

10. Procedure to make anyone of one of the parrots black & white in a given picture.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper	**: Data Structures and Computer Algorithms**	
Semester	**: IV**	**Contact Hours: 4**
Sub Code	**: 17J41**	**Credits : 3**

Objectives:

Understanding basic data structures and algorithms and demonstrate advantages and disadvantages of specific algorithms and data structures.

Unit-I

Introduction And Overview: Introduction-Basic Terminology; Elementary Data Organization-Data Structures-Data Structure Operations – **Arrays Records and Pointers:** Introduction-Linear Arrays-Representation of Linear Arrays in Memory-Traversing Linear Arrays-Inserting and Deleting-Searching; Linear Search - Multidimensional Arrays - **Linked Lists:** Introduction-Linked Lists- Header Linked Lists-Two-way Lists.

Unit-II

Stacks, Queues, Recursion: Introduction - Stacks – Array Representation of Stack-Linked Representation of Stack- Towers of Hanoi - Queues – Linked Representation of Queues - Deques-Priority Queues.

Unit- III

Trees: Introduction- Binary Trees - Representation of Binary Trees in Memory – Traversing Binary Trees – Binary Search Trees-**Graphs and Their Applications:** Introduction-Graph Theory Terminology-Sequential Representation of Graphs; Adjacency Matrix; Path Matrix-Operations on Graphs.

Unit- IV

Introduction: What is an Algorithm? – Algorithm Specification – Performance Analysis – **Divide and Conquer:** General method – Binary Search – Finding the Maximum and Minimum – Merge Sort – Quick Sort.

Unit -V

The Greedy Method: General Method – Knapsack problem – Job Sequencing with Deadlines – Minimum cost Spanning trees-Prim's Algorithm – Kruskal Algorithm – Optimal Storage on tapes – Optimal merge patterns – Single –sources Shortest Paths-**Backtracking :** The General Method – The 8-Queens Problem.

Text Books

1. Seymour Lipschutz, *Data Structures*, McGraw Hill Education (India) Pvt. Ltd., New Delhi, Revised 1st Edition, 2013.

Chapters :

Unit – I : 1.1 to 1.4, 4.1 to 4.5, 4.7, 4.9, 5.1, 5.2, 5.9, 5.10

Unit – II : 6.1 to 6.4, 6.8, 6.10, 6.11, 6.12, 6.13

Unit – III: 7.1 to 7.4, 7.7, 8.1 to 8.3, 8.6

2. Ellis Horrowitz, Sarataj Sahni, Sanguthevar Rajasekaran, *Computer Algorithms / C++*, Universities Press Pvt. Ltd., Hyderabad, 2nd Edition, 2008.

Chapters :

Unit IV : 1.1 to 1.3, 3.1,3.3 to 3.6

Unit V : 4.1,4.3,4.5,4.6-4.6.1,4.6.2,4.7 to 4.9,7.1,7.2

Reference Books

1. D.Malik, *Data Structures using C++*, Cengage Learning, 2nd Edition, 2009.
2. Mark Allen Weiss, *Data Structures and Algorithm Analysis in C++*, PHI, 3rd Edition, 2006.
3. Sartaj Salini, Dinesh Mehta & Ellis Horowitz, *Fundamentals of Data Structures in C++*, Silicon Publications, 2nd Edition, 2006.
4. Elliot B. Koffman, Paul A.T. Wolfgang, *Objects, Abstraction, Data Structures and Design: Using C++*, Wiley Publications, 1st Edition, 2005.
5. Mark Allen weiss, *Data structures & algorithms analysis in C++,* Dorlingkindersely (India) Pvt. Ltd., Pearson Education, 1st Edtion, 2007.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper : Data Structures and Computer Algorithms Lab
Semester : IV **Contact Hours: 3**
Sub Code : 17J4P **Credits : 3**

Objectives:

To impart the basic concepts of data structures and algorithms. To understand basic concepts about stacks, queues, lists trees and graphs.

Data Structures:

1. Implementing Stack as an array.
2. Implementing Stack as a linked list.
3. Convert Infix expression to Postfix expression using Stack.
4. Convert Infix expression to Prefix expression using Stack.
5. Implementing Queue as an Array.
6. Implementing Queue as a linked list.
7. Implementing Circular Queue
8. Binary tree traversals.
9. Implement Binary Search Tree.
10. Representation of Graph.

Algorithms:

1. Linear Search
2. Binary Search
3. Bubble Sort Algorithm.
4. Insertion Sort Algorithm.
5. Merge Sort Algorithm.
6. Selection Sort Algorithm.
7. Knapsack Problem.
8. Prim's Algorithm.
9. Krushkal's Algorithm.
10. Single Source Shortest Path.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper	**: Relational Database Management System**	
Semester	**: IV**	**Contact Hours: 4**
Sub Code	**: 17J42**	**Credits : 4**

Objectives: To acquire knowledge on how data is processed and retrieved at time of necessity in a desired manner.

Unit -I

Overview of Database Systems: Managing Data – A Historical Perspective – File Systems Versus a DBMS – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People Who Work with Databases. **Introduction to Database Design:** Database Design and ER Diagrams – Entities, Attributes, and Entity Sets – Relationships and Relationship Sets – Additional Features of ER Model – Conceptual Design with the ER Model.

Unit -II

The Relational Model: Introduction to the Relational Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data – Logical Database Design: ER to Relational – Introduction to Views – Destroying / Altering Tables and Views. **Relational Algebra and Calculus:** Preliminaries – Relational Algebra: Selection and Projection – Set Operations –Renaming – Joins - Division Relational Calculus: Tuple Relational Calculus – Domain Relational Calculus.

Unit -III

SQL Queries, Constraints, Triggers: The Form of a Basic SQL Query - UNION, INTERSECT, and EXCEPT – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and Active Databases – Designing Active Databases.

Annexure – 14

Unit- IV

Schema Refinement and Normal Forms: Introduction to Schema Refinement – Functional Dependencies – Reasoning about FD's – Normal Forms – Properties of Decompositions – Normalization – Schema Refinement in Database Design – Other Kinds of Dependencies

Unit -V

Overview of Transaction management: The ACID Properties – Transactions and Schedules – Concurrent Execution of transactions – Lock Based Concurrency Control – Performance of Locking – Transaction Support in SQL – Introduction to Crash Recovery.

Security and Authorization: Introduction to Database Security - Access Control – Discretionary Access Control – Mandatory Access Control – Security for Internet Applications – Additional Issues Related to Security.

Text Book

1. Raghu Ramakrishnan & Johannes Gehrke, *Database Management Systems*, McGraw Hill International Edition, 3rd Edition, 2003.

Chapters :

Unit -I : 1.1 – 1.9, 2.1 – 2.5

Unit -II : 3.1 – 3.7, 4.1 ,4.2:4.2.1 to 4.2.5, 4.3

Unit -III : 5.2 – 5.9

Unit- IV : 19.1 – 19.8

Unit- V : 16.1 – 16.7, 21.1 – 21.6

Reference Books

1. G.K. Gupta, *Database Management Systems*, McGraw Hill Education, 4th reprint, 2015.
2. Abraham Silberschatz, Henry F.Korth & S.Sudarshan, *Database System Concepts,* McGraw Hill, 6th Edition, 2010.
3. R.Pannerselvam, *Database Management Systems,* PHI Learning, 2nd Edition, 2015.
4. R.Elmasri & S.B.Navathe, *Database Systems Models, Languages, D*esign *and Application Programming*, Pearson Education, 6th Edition, 2013.
5. Carlos Coronel, Steven Morris & Peterrob, *Database systems : Design, Implementation and Management*, Cengage Learning, 10th Edition, 2012.

Annexure – 14

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Skill Based Elective - IV

Title of the Paper : RDBMS Lab
Semester : IV **Contact Hours: 2**
Sub Code : 17SEJ4P **Credits : 2**

SQL QUERIES:

1. DDL Commands
2. DML Commands
3. Create a table Student-master with the following fields client_no,name, address, city, state, pincode, remarks, bal_due with suitable data types. Insert and Delete data into client_master.
   a. Create another table supplier_table from client_master. Select all the fields and rename client_no with supplier_no and name with supplier_name.
   b. Insert data into client_master
   c. Insert data into supplier_master from client_master.
   d. Delete the selected row in the client_master.
4. Create a table sales_order with s_order_no and product_no as primary key. Set other fields to store client number, delivery address, delivery date,order status.
   a. Add a new column for storing salesman number using ALTER Command.
   b. Set the s_order_no as foregin key as column constraints.
   c. Set the s_order_no as foreign key as table constraints.
   d. Enforce the integrity rules using CHECK.
5. Create a table student_master with the following fields name, regno, dept and year with suitable data types. Use Select command to do the following.

a. Select the student's name column.

b. Eliminate the duplicate entry in table.

c. Sort the table in alphabetical order.

d. Select all the Students of a particular department.

6. Create a table sales_order_details with the s_order_no as primary key and with the following fields: product_no, description, qty_ordered, qty_disp,product_rate, profit_percent, sell_price, supplier_name.Processing the selection operation

7. Create a Employee table with following Fields Eno,Ename,job type,manager,hire date,dno,commission,salary, Processing of sub queries & multiple sub queries.

PL/SQL QUERIES:

8. Create a table master book to contain the information of magazine code, magazine name and publisher. Weekly/biweekly/monthly, price. Write PL/SQL block to perform insert, update and delete operations on the above table.

9. Create a table to contain phone number, user name, address of the phone user. Write a function to search for a address using phone numbers.

10. Create a table stock to contain the item-code, item-name, current stock, date of last purchase. Write a stored procedure to seek for an item using item-code and delete it, if the date of last purchase is before 1 year from the current date. If not, update the current stock.

11. Create a table to store the salary details of the employees in a company. Declare the Cursor to contain employee number, employee name and net salary. Use Cursor to update the employee salaries.

12. Create a table to contain the information about the voters in a particular constituency. Write a proper trigger to update or delete a row in the table.

13. Create a table to store the details of the alumnus in an institution. Write a PL/SQL block to change address of particular alumni. Write proper exceptions and appropriate error messages.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper : Operating System
Semester : V **Contact Hours: 5**
Sub Code : 17J51 **Credits : 4**

Objective:

To learn the concept of Operating System and its functions, Processes, CPU Scheduling, Process Synchronization, Main Memory, Virtual memory, File System.

Unit- I

Introduction: What Operating Systems Do-Computer System Organization-Computer System Architecture-Operating System Structure-Operating System Operations-Distributed Systems-Open Source Operating Systems- **Operating System Structures**: Operating System Services- User Operating System Interface-System Calls-Types of System Calls-System Programs-Virtual Machines.

Unit- II

Processes: Process Concept-Process scheduling-Operation on process- Interprocess communication- Examples of IPC Systems-Communication in Client Server Systems- **Threads**: Overview-Multithreading Models-Thread Libraries-Threading Issues-Operating System Examples.

Unit- III

CPU Scheduling: Basic concepts- Scheduling criteria-Scheduling algorithms. Thread Scheduling - Multiple Processor Scheduling - **Process Synchronization :**Background - The Critical Section Problem-Peterson's Solution-Synchronization Hardware - Semaphores- Classic Problems-Monitors-Synchronization Examples- Deadlocks.

Unit- IV

Main Memory: Background-swapping-Contiguous Memory allocation-Paging-Structure of the Page Table-Segmentation-**Virtual memory**: Background-Demand Paging-Copy on Write-Page Replacement-Allocation of Frames-Thrashing.

Unit- V

File System: File concepts-Access methods-**File System Implementation:** File System Structure-Allocation Methods-Free Space Management-**Mass-Storage Structure:** Overview of Mass Storage Structure-Disk structure- Disk Scheduling-Disk Management-Swap Space Management.

Text book:

1. Silberschatz Galvin, *Operating System Concepts*, John Wiley & Sons, New Delhi, 9th Edition, 2011.

Chapters:

Unit- I : 1.1 to 1.5, 1.10, 1.13, 2.1 to 2.5, 2.8.

Unit- II : 3.1 to 3.6, 4.1,4.5.

Unit- III : 5.1 to 5.5, 6.1 to 6.9.

Unit- IV : 7.1 to 7.6,8.1 to 8.6.

Unit- V : 9.1,9.2,10.1,10.4,10.5,11.1,11.2,11.4 to 11.6.

Reference Books:

1. Achyut Godbole S., *Operating Systems*, Tata McGraw Hill Education, India, 3rd Edition, 2010.
2. Dhamdhere D M., *Operating systems (A concept- based approach),* Tata McGraw Hill Education, India, 2nd Edition, 2010.
3. Milan MilenKovic, *Operating System-Concepts and Design,* Tata McGraw Hill Education, India, 2nd Edition, 2010.
4. Pramod Chandra Bhatt, *An Introduction to Operating Systems*, Concepts and Practice, PHI Learning Pvt. Ltd., Delhi, 4th Edition, 2014.
5. William Stallings, *Operating Systems: Internals and Design Principles*, Pearson Education, India, 7th Edition, 2012.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper : Data Communication and Computer Networks
Semester : V **Contact Hours : 6**
Sub Code : 17J52 **Credits : 4**

Objective:

To acquire knowledge about transmission media, LAN, ISDN, ATM, Transport Layer concept, Network Architectures and OSI Model, Communication Media and Data Transmission.

Unit –I

Introduction: A Brief History – Application – Computer Networks – Categories of Networks – Standards and Standards Organizations. **Network Architectures and OSI Model:** Network Architecture – Open System and OSI Model - TCP/IP Architecture – Advantages and Disadvantages of Layer architectures – Distributed system and Client-Server Models.

Unit – II

Communication Media and Data Transmission: Fourier Analysis – Analog and Digital Data Transmission – Modulation and Demodulation - Transmission media – Wireless Communications – Data Transmission Basics – Transmission Mode – Interfacing - Multiplexing. **Error Detection and Correction:** Types of Errors – Error Detection – Error Correction.

Unit – III

Data Link Control and Protocol Concepts: Flow Control – Error Control – Asynchronous Protocols – Synchronous Protocols – High-Level Data Link Control (HDLC). **Integrated Services and Routing Protocols:** Integrating Services – ISDN Services – ISDN Topology – ISDN Protocols – Broadband ISDN – Asynchronous Transfer Mode (ATM) – Principal Characteristics of ATM – Frame Relay – Comparison of ISDN, ATM and Frame Relay.

Unit – IV

Local Area Networks: Types of Networks and Topology –LAN Transmission Equipment – Ethernet: IEEE Standard 802.3 - Token Bus: IEEE Standard 802.4 - Token Ring: IEEE Standard 802.5 – Fiber Distributed Data Interface (FDDI) – Distributed Queue Dual Bus (DQDB) – Ethernet technologies. **Network Applications:** Client-Server Model – Domain Name System (DNS) – Telnet – File transfer And Remote File Access – Electronic Mail – World Wide Web (WWW).

Unit – V

Internetworking: Principles of Internetworking – Routing Principles – Internetwork Protocols (IP) – IP Next Generation. **Networking Security:** Fundamental Concepts – A Model for Network Security – Security Services and Cryptography – Security Network Using Firewall – Intrusion Detection – Network Security Tools.

Text Book :

1. Brijendra Singh, *Data Communications and Networks,* PHI Learning Private Limited, NewDelhi, 4th Edition , 2014.

Chapters:

Unit I	: 1.1-1.4,1.8,2.1-2.5.
Unit II	: 3.2-3.9,3.11,4.1-4.3,
Unit III	: 6.1-6.5,9.1-9.9
Unit IV	: 7.1-7.7,7.10,14.1-14.6
Unit V	: 12.1,12.3,12.5,12.7,16.1,16.6-16.9

Reference Books:

1. Comer, *Computer Networks & Internet with Internet Applications*, Pearson Education, Pearson Prentice Hall, NewDelhi, 4th Edition, 2004
2. Achyut Godbole S. & Atul Kahate, *Data Communications And Networks*, Tata McGraw Hill, 2nd Edition, 2013.
3. Simin Haykins S., *Communication System*, Tata McGraw- Hill, New Delhi, 4th Edition, 2006.
4. Tanenbam S., *Computer Network*, PHI Prentice Hall, New Delhi, 4th Edition, 2004.
5. William Stallings, *Data and Computer Communication Network*, Tata McGraw Hill Delhi, 6th Edition, 2007.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper : Dot Net Programming
Semester : V **Contact Hours: 5**
Sub Code : 17J53 **Credits : 4**

Objectives

To develop the programming skills in .NET Area, Arrays and Structure, Function and Procedures, Textbox, Button, Label and LinkLabel, Creating Our Own Class Library.

Unit-I

.Net Framework Overview:.Net Framework-.Net Architecture- namespace. **Introduction to VB.NET**: Visual Basic .NET – Programming Essentials – Boxing and Unboxing –**Control Structures:** If Statement – Else If Statement – Select Case. **Loop Structures:** while Statement – Do Statement – Do until statement – For Statement.

Unit-II

Arrays and Structure: One Dimensional Array Elements – Two Dimensional Arrays – Structures. **Function and Procedures:** Functions – Sub Procedure – **OOP Concepts:** Class and Object – constructor – Inheritance. **Exception Handling:** Exception Handling.

Unit-III

Textbox, Button, Label and LinkLabel: Label, Button and LinkLabel,-TextBox. **ListBox, Scroll Bars, Checkbox and Radio Button:** The List Box Control - Scroll Bar - Checkbox and Radio Button. **Picture Box, Timer Box, and Menu Strip:** Picture Box, Time control – Menu strip – Combo Box.**. Month Calendar, Date Time Picker, Checked List Box:** Date Time Picker – Month Calendar – Checked List Box. **Delegates and Events:** Delegates – Events – Different Kind of Execution.

Unit-IV

Creating Our Own Class Library: Creation of class Library and using them in an application – Authentication Form – Student Mark. **OOP Concepts in Library:** Constructor – Circle – triangle – Inheritance in Employee record – Sales and Servicing. **Excel Application in VB.NET:** Excel in VB.NET – Mark sheet. **Database in VB.NET:** Creating Database – Navigation of Records – Elementary Operation of Database. **Report Generation:** Crystal Report – Field Explorer and Database Expert. **Graphics in VB.NET:** Displaying a String – Displaying a Line – Displaying Lines – Displaying a Square – Displaying a Solid Rectangle – Displaying an image.

Unit-V

Working with ASP .NET Server Controls: Introduction to Server Controls- A Closer Look at ASP.NET Server Controls- Defining Controls in Your Pages- Common Properties for All Controls- Types of Controls- Standard Controls- HTML Controls- Data Controls- Validation Controls- Navigation Controls- Login Controls- Ajax Extensions- WebParts- Dynamic Data. **User Controls-** Introduction to User Controls: Creating User Controls-Adding User Controls to a Content Page or Master Page- Sitewide Registration of User Controls-User Control Caveats-Adding Logic to Your User Controls: Creating Your Own Data Types for Properties-Implementing View State Properties-View State Considerations.

Text book:

1. Christy V., *Programming in VB .Net*, University Science Press (An Imprint of Laxmi Publications Pvt. Ltd.), India, 2012.

Chapters:

Unit- I : 1,2,3,4.

Unit- II : 5,6,7,8.

Unit- III: 9,10,11,13,19.

Unit- IV: 20,21,23,24,25,26.

Text book:

2. Imar Spaanjaars, *Beginning ASP.Net 4.5.1 in C# and VB*, John Wiley & Sons Inc., 2014.

Unit- V: 4,8.

Reference Books:

1. FrancescoBalena, *Programming Microsoft VisualBasic .Net*(CoreReference), Microsoft Press, India, Har/Cdr/Dv 2nd Edition, 2005.
2. Gary Bronson J & David Rosenthal, *Introduction to Programming with Visual Basic .Net,* Jones & Bartlett Learning, Canada, 8th Edition, 2012.
3. Michael McMillan, *Object–Oriented Programming with Visual Basic .Net,* Cambridge University Press, UK, 1st Edition, 2004.
4. Shirish Chavan, *Visual Basic .Net*, Pearson Education, India, 1st Edition, 2007.
5. Steven Holzner, *Sams Teach Yourself Microsoft Visual Basic .Net 2003 in 21 Days*, Sams Publishing, India, 4th Edition, 2010.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper	**: Dot Net Programming Lab**	
Semester	**: V**	**Contact Hours : 5**
Subject Code	**: 17J5P**	**Credits : 3**

List of Programs:

Window Applications:

1. Mathematical Functions using *ComboBox*
2. Change Font and color of text using *Dialog Controls*
3. Pressure and Sugar level using *Track Bar*
4. Date of birth Calculation using *DateTimePicker*
5. Accessing a Web page using *LinkLabel*
6. Add or Remove Items using *ListBox*
7. ZoomIn and ZoomOut an image using *MouseEvents*
8. Word pad Manipulation using *MenuStrip*
9. Filter data from Employee Database using *OLEDB*

Console Applications:

10. Determine Grade value using *Control Statements*
11. Matrix Summation using *Arrays*
12. Factorial of odd and even numbers using *Functions*
13. Display Rectangle Shape using *Procedures*
14. EB Bill calculation using *Structures*
15. Checking Password using *Properties*
16. Tribonacci Series using Inheritance
17. Standard Deviation of given elements using Delegates

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)
Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Elective-I

Title of the Paper	**: Computer Graphics**	
Semester	**: V**	**Contact Hours: 5**
Sub Code	**: 17JE5A**	**Credits : 5**

Objectives:

To make students understand about fundamentals of Graphics to enable them to design animated scenes for virtual object creations.

Unit- I

A Survey of computer graphics: Computer –Aided Design – Presentation Graphics – Computer art – Entertainment – Education and Training – Visualization – Image Processing – Graphical user Interfaces. **Overview of Graphics system:** Video display devices- Refresh Cathode-Ray Tubes, Raster scan Displays, Random-Scan Displays, Color CRT Monitors, Direct-View Storage Tubes,3D Viewing Devices, Stereoscopic Reality Systems- Raster Scan systems-Random scan system -I/P devices-Hard copy devices-Graphics software.

Unit-II

Output Primitives: Points and lines-Line drawing algorithms: DDA Algorithms, Bresenham's Line Algorithm-Loading the frame buffer-Circle generating algorithms- Other curves-Pixel Addressing-Filled area primitives-Fill-Area Functions-Cell Array- Character Generation.

Unit- III

Attributes of Output Primitives: Line attributes: Line Type, Line Width, Line Color-

Curve attribute-Color and grayscale levels-Area fill attributes-Character attributes-Bundled attributes-Inquiry functions-Antialising: Antialising Area Boundaries.

Unit- IV

Two- Dimensional Geometric Transformations: Basic Transformations: Translation-Rotation-Scaling-Matrix representations and homogeneous coordinates-Composite transformations: Translations-Rotations-Scaling-General pivot point Rotation-General Scaling Directions-Concatenation Properties-General Composite Transformations and Computational Efficiency-Other Transformations: Reflection-Shear-**Three Dimensional Concepts :** Three-Dimensional display methods: parallel project – perspective projection – depth cueing – visible Line and surface – Identification. Exploded and cutaway views – Three-Dimensional and stereoscopic- views- Three-Dimensional graphics Packages.

Unit- V

Two –Dimensional Viewing: The Viewing Pipeline-Viewing Coordinate reference frame-Window-to-View port Coordinate transformation-Two-Dimensional Viewing functions-Clipping Operations-Point clipping-Line clipping: Cohen-Sutherland Line Clipping, Liang-Barsky Line Clipping, Nicholle-Lee-Nicholl Line Clipping- Line Clipping using NonRectangular – Clip Windows – Splitting Concave Polygon -Polygon Clipping: Sutherland-Hodgeman Polygon Clipping – Weiler Atherton Polygon Clipping - Other Polygon Clipping Algorithms-Curve Clipping-Text clipping –Exterior Clipping.

Text Book:

1. Donald Hearn & Pauline Baker M., *Computer Graphics C version*, Pearson Education, India, 2nd Edition, 2017.

Chapters:

Unit - I : 1,2

Unit - II : 3.1, 3.2, 3.3, 3.5, 3.7, 3.10, 3.11, 3.12, 3.13, 3.14

Unit - III : 4

Unit - IV : 5.1 - 5.4 , 9.1, 9.2

Unit - V : 6

Reference Books:

1. Malay K. Pakhira, *Computer Graphics, Multimedia and Animation,* Prentice Hall Of India Pvt. Ltd., New Delhi, 2008.
2. Mukherjee D.P., *Fundamentals Of Computer Graphics And Multimedia* Prentice Hall Of India Pvt. Ltd., New Delhi, 1st Edition, 2009.
3. Peter Shirley, *Fundamentals of Computer Graphics*, A.K. Peters Ltd., Wellesley, United States, 3rd Edition, 2009.
4. Dr. Jeffrey McConnell J, *Computer Graphics Theory into Practice*, Jones & Bartlett Publishers, Sudbury, 1st Edition, 2006.
5. Donald D. Hearn, *Computer Graphics with Open GL,* University of Illinois at Urbana-Champaign, India, 4th Edition, 2011.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Elective I

Title of the Paper	**:**	**Enterprise Resource Planning**	
Semester	**:**	**V**	**Contact Hours: 5**
Sub Code	**:**	**17JE5B**	**Credits : 5**

Objectives:

To acquire knowledge about Business Modeling, Architecture, Commercial ERP, ERP Implementation, The ERP Domain, ERP A Curtain Raiser.

Unit- I

ERP A Curtain Raiser: An Overview-Accommodating Variety-Integrated Management Information-Seamless Integration-Supply Chain management-Resource Management-IntegrateddataModel-Scope-Technology-Benefits-Evolution-ERP Revisited-ERP and the modern Enterprise.

Unit- II

Business Engineering And ERP: An Overview-What is Business Engineering-Significance of Business Engineering-Principles of Business Engineering-BPR, ERP AND IT-Business Engineering with Information Technology-ERP and Management Concerns.

Unit- III

Business Modeling For ERP: An Overview-Building the Business Model-**ERP and The Competitive advantage:** An Overview-ERP and the Competitive Strategy-**Marketing Of ERP:** An Overview-Market Dynamics and Competitive Strategy.

Unit- IV

ERP Implementation: An Overview- Role of Consultants, Vendors and Users-Customization-Precautions-ERP: Post Implementation Options-ERP Implementation Methodology- Guidelines for ERP Implementation.

Unit- V

The ERP Domain: An Overview-MFG/PRO-IFS/Avalon Industrial and Financial Systems-Baan-SAP-SAP R/3 Applications-Example of an Indian ERP Package-The Arrival of ERP.

Text book:

1. Vinod Kumar Garg, Venkitakrishnan N.K., *Enterprice Resource Planning*, New Delhi, II Edition, 2011.

Chapters:

Unit- I : 1

Unit- II : 2

Unit- III : 3, 5, 7

Unit- IV : 4

Unit- V : 6

Reference Books:

1. Joseph Brady A., Ellen Monk F. & Bret Wagner, *Concepts in Enterprise Resource Planning*, Thompson Course Technology, 3rd Edition, 2008.
2. Vinod Kumar Garg & Venkitakrishnan N. K., *Enterprise Resource Planning – Concepts and Practice*, PHI, 2nd Edition, 2004
3. Mary Sumner, *Enterprise Resource Planning*, Pearson Education, 9th Edition, 2012.
4. Alexis Leon, *Enterprise Resource Planning*, Mc-Graw Hill Education, 2nd Edition, 2014.
5. Jaiswal, *Textbook of Enterprise Resource Planning*, Macmillan Publishers, 1st Edition, 2005.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A^+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Skill Based Elective - V

Title of the Paper : Networking Lab
Semester : V **Contact Hours: 2**
Sub Code : 17SEJ5P **Credits : 2**

List of Programs:

1. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
2. Study of Network Devices in Detail.
3. Study of network IP.
4. Connect the computers in Local Area Network.
5. Study of basic network command and Network configuration commands.
6. Performing an Initial Switch Configuration
7. Performing an Initial Router Configuration
8. Configuring and Troubleshooting a Switched Network
9. Connecting a Switch
10. Configuring WEP on a Wireless Router
11. Using the Cisco IOS Show Commands
12. Examining WAN Connections
13. Interpreting Ping and Trace route Output
14. Demonstrating Distribution Layer Functions
15. Placing ACLs
16. Exploring Different LAN Switch Options

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper : Software Engineering
Semester : VI **Contact Hours: 5**
Sub Code : 17J61 **Credits : 4**

Objectives:

To acquire knowledge about retrieval of data from voluminous data in a desired manner, Understanding Requirements, Design Concepts, Requirements Modeling.

Unit-I

Software and Software Engineering: The nature of Software –Software Engineering – The Software Process- **Process Models**: A Generic Process Model – Process Assessment and Improvement– Prescriptive Process Model – Specialized process model – The Unified Process – Personal and Team Process Model – Process Technology – Product and Process - Agile Development: What is Agility – Agility and the Cost of Change – What is an Agility process.

Unit-II

Understanding Requirements: Requirements Engineering-Establishing the Groundwork-Eliciting requirements- Developing use case - Building the Requirements Model-Negotiating Requirements -Validating Requirements –**Requirements Modeling**: Requirements analysis– Data Modeling Concepts.

Unit-III

Design Concepts: Design concepts-The Design model-Architectural design-**Component Level Design**: What is Component – Designing Class-Based Components-Conducting

Components-level Design - Components-level Design for webApps-User interface Analysis and design.

Unit-IV

Review Techniques: Informal Reviews - Formal Technical Reviews - **Software Quality Assurance:** SQA Tasks, Goals and Metrics- -Software Reliability – The ISO 9000 Quality Standards-The SQA Plan– **Software Testing Strategies:** A Strategic Approach to Software Testing-Test Strategies for conventional Software -Validation Testing - System Testing-The Art of Debugging- **Estimation for Software Projects:** Software Project Estimation-Decomposition Techniques: Software Sizing-Problem Based Estimation-An Example of LOC Based Estimation-An Example of FP Based Estimation-Process Based Estimation-An Example of Process Based Estimation-Estimation with Use Cases-An Example of Use Case Based Estimation-Reconciling Estimates-Empirical Estimation Models: The Structure of Estimation Models-The COCOMO II Model-The Software Equation.

Unit-V

Software Configuration Management: SCM process – The SCM Repository – The SCM Process – **Risk Management:** Software Risk – Risk Identification – Risk Projection – Risk Refinement – Risk Mitigation, Monitoring, and management -The RMMM Plan. **Project Scheduling:** Project Scheduling: Basic Principles- The Relationship between People and Effort-Effort Distribution.

Text Book:

1. Roger Pressman S., *Software Engineering: A Practitioner's Approach* Mc Graw Hill Education, New Delhi, 6th Edition, 2010.

Chapters:

Unit I : 1.1, 1.3, 1.4, 2.1 - 2.8, 3.1 - 3.3

Unit II : 5.1 - 5.7, 6.1, 6.4

Unit III : 8.3, 8.4, 9.4, 10.1 - 10.4

Unit IV : 15.5, 15.6, 16.3, 16.6 - 16.8, 17.1, 17.3, 17.6 - 17.8, 26.5 - 26.7

Unit V : 22.1 - 22.3, 28.2 - 28.7, 27.2

Reference Books:

1. Aggarwal K. K. & Yogesh Singh, *Software Engineering, New Age International*, New Delhi, 2nd Edition, 2007.
2. Ian Sommerville, *Software Engineering*, Pearson Education Asia, Hong Kong, 6th Edition, 2009.
3. James Peters F & Witold Pedryez, *Software Engineering – An Engineering Approach*, John Wiley and Sons, New Delhi, 2nd Edition, 2007.
4. Pankaj Jalote, *An Integrated Approach to Software Engineering Springer Verlag*, India, 3rd Edition, 2005.
5. Richard Fairley E., *Software Engineering Concepts*, McGraw Hill Ryerson, New York, 2nd Edition, 2004.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper : Web Technology
Semester : VI **Contact Hours: 6**
Sub Code : 17J62 **Credits : 4**

Objectives:

To enable to create their own website in internet, Database: SQL, MySQL, LINQ and Java DB, Cascading Style Sheets.

Unit-I

Introduction to HTML5: Introduction-Editing HTML5-First HTML5 Example-W3C HTML5 Validation Service-Headings-Linking - Images: Alt Attribute- Void Elements – Using Images as Hyperlinks -Special Characters and Horizontal Rules-Lists-Tables-Forms-Internal Linking-Meta Element-New HTML5 Form input Types.

Unit-II

Introduction to Cascading Style Sheets™(CSS): Introduction –Inline Styles-Embedded Style Sheets-Conflicting Styles-Linking External Style Sheets-Positioning Elements: Absolute Positioning, Z-index-Positioning Elements: Relative Positioning, span-Backgrounds-Text Shadows-Rounded Corners-Color-Box Shadows-Linear Gradients; Introducing Vendor Prefixes-Radial Gradients – (Optional: WebKit Only)Text Stroke-Multiple Background Images-(Optional: WebKit Only)Reflections-Image Borders-Animation; Selectors-Transitions and Transformations-Downloading Web Fonts and the @font-face Rule-Flexible Box Layout Module and : nth-child Selectors-Multicolumn Layout.

Unit - III

JavaScript: Introduction to Scripting: Introduction-Your First Script: Displaying a Line of Text with JavaScript in a Web Page-Memory Concepts- JavaScript: Function : Function Definitions-JavaScript Global Functions-JavaScript: Arrays: Arrays- Declaring and Allocating Arrays- Passing Arrays to Functions- Multidimensional Arrays - JavaScript: Objects: String Objects-Date Object-Boolean and Number Objects-Document Object-Using JSON to Represent Objects.

Unit-IV

Database: SQL, MySQL, LINQ and Java DB : Introduction - Relational Databases - Relational Database Overview: A books Database - SQL - Basic SELECT Query - WHERE Clause - ORDER BY Clause - Merging Data from Multiple Tables: INNER JOIN - INSERT Statement -UPDATE Statement - DELETE Statement - MySQL - Instructions for Setting Up a MySQL User Account - Creating Databases in MySQL.

Unit-V

PHP: Introduction-Simple PHP Program-Converting Between Data Types-Arithmetic Operators-Initializing and Manipulating Arrays-String Comparisons-String Processing with Regular Expressions-Form Processing and Business Logic-Reading from a Database-Using Cookies.

Text Book:

1. Paul Deitel, Harvey Deitel & Abbey Deitel, *Internet & World Wide Web*, *How to Program,* Pearson Edition, 5th Edition, 2012.

Chapters:

Unit - I : 2.1-2.13,3.2

Unit - II : 4.1-4.8,5.2-5.16.

Unit – III : 6.1,6.2,6.5,9.3,9.8,10.2,10.3,10.7,10.10,11.3-11.6,11.8

Unit – IV : 18.1-18.5

Unit - V : 19.1-19.10

Reference Books:

1. Dr. Vaka Murali Mohan, Pratap Singh S., *The Modern Approach to Web Technologies*, Scirech Publication , 1st Edition , 2010.
2. Akilandeswari J. & Gopalan NP., *TCP/IP to Internet Application Architecture, PHI Publications,* New Delhi, 2nd Edition, 2007.
3. Ivan Bayross, *Web Technologies part II*, BPB publications, NewDelhi, II Edition, 2007.
4. Rajkamal, Web Technologies, TMH Publications, New Delhi, 1st Edition, 2007.
5. Schafer Steven M., HTML, XHTML&CSS, Wiley Publishing, 5th Edition, 2010.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Title of the Paper	**: Web Technology Lab**	
Semester	**: VI**	**Contact Hours : 5**
Sub Code	**: 17J6P**	**Credits : 3**

Programming List:

HTML:

1. List
2. Link
3. Frames
4. Tables
5. Designing a Form

JAVA SCRIPT:

6. Arithmetic Operations
7. Color Palette
8. Online Examination
9. Window Objects
10. Pizza Order

PHP:

11. Program Using String.
12. Program Using String Length Function.
13. Program Using String OOPS Function.
14. Program Using Switch Statement.
15. Program Using Function.
16. Program Using Array.
17. Program For to Retrieve Cookies.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A^+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Elective II

Title of the Paper : Data Mining
Semester : VI **Contact Hours: 5**
Sub Code : 17JE6A **Credits : 5**

Objectives:

To acquire knowledge about retrieval of data from voluminous data in a desired manner, Association Rules, Decision Trees, Clustering Techniques.

Unit-I

Data Mining: Introduction - What is Data Mining? – Data Mining Functionalities –KDD vs Data Mining – Other related Areas- DM Technique- Other mining problems – Issues and challenges in DM – DM applications areas- DM Applications case studies. **Association Rules:** Introduction – What is an Association Rule - Methods to Discover Association Rules- Apriori Algorithm.

Unit-II

Data Warehousing: Introduction - Data warehouse Architecture - Dimensional Modeling - categories of Hierarchies - Aggregate Function – Summarisability - Fact Dimension Relationship - OLAP operations - Lattice of Cuboids - OLAP Server – ROLAP - MOLAP - Data Marting - ETL - Data Cleaning - ETL vs ELT.

Unit-III

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 – Pruning Technique. **Genetic Algorithm:** Introduction – Basic Steps of GA – Selection – Crossover – Mutation – Data Mining Using GA.

Unit-IV

Clustering Techniques: Introduction – Clustering Paradigms – Partitioning Algorithms – **K**-Medoid Algorithm – CLARA – CLARANS – Hierarchical Clustering – DBSCAN – BIRCH – CURE. **Other Techniques:** Introduction – What is a Neural Network - Learning in NN – Unsupervised Learning – Support Vector machine.

Unit-V

Web Mining: Introduction – Web Mining – Web Content Mining – Web Structure Mining – Web Usage Mining – Text Mining – Unstructured Text – Text Clustering. Temporal and Spatial Data Mining: Introduction – What is Temporal Data Mining – Temporal Association Rules – Sequence Mining – Spatial MINING – Spatial Mining Tasks – Spatial Clustering – Spatial Trends.

Text Book:

1. Arun K Pujari, *Data Mining : Concepts and Techniques*, Universities Press, Patna, 4th Edition, 2017.

Chapters:

Unit I : 3.1 - 3.11, 4.1. - 4.4

Unit II : 2.1 - 2.12, 2.22 - 2.26

Unit III : 6.1 - 6.11, 6.18, 8.1 - 8.6

Unit IV : 5.1 - 5.10, 9.1 - 9.6

Unit V : 11.1 - 11.7, 11.10, 12.1 - 12.4, 12.12 - 12.5

Reference Books:

1. Arun K.Pujari, *Data Mining Techniques*, Universities press, 3rd Edition, 2013.
2. Mourya S.K., Shalu Gupta, *Data Mining and Data warehousing* , Narosa Publishing House Private Ltd., 1st Edition, 2013.
3. Jiawei Han & Micheline Kamber, *Datamining Concepts & Techniques*, Morgon Kaufmann Publishers, San Francisco, USA, 2nd Edition, 2010.
4. Margaret Dunham H. & Sridhar S., *Introductory and Advanced topics in Data Mining,* Pearson Education, New Delhi, II Edition, 2016.
5. Gupta G. K., *Introduction To Data Mining With Case Studies,* Eastern Economy Edition, Prentice Hall Of India, II Edition 2011.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A^+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Elective II

Title of the Paper	**: Compiler Design**	
Semester	**: VI**	**Contact Hours: 5**
Sub Code	**: 17JE6B**	**Credits : 5**

Objectives:

To acquire knowledge about Compilers , Lexical Analysis , Syntax Analysis, Intermediate Code Generation, Code Generation, Code Optimization.

Unit- I

Introduction To Compilers-Introduction-What are Compilers: Analysis-Synthesis Model-Examples of Software Tools Used for Analysis-Conventional Compiler-Classification of Compilers-Analysis of source program-Phases of a Compiler: Lexical Analysis(Scanning/Scanner)-Syntax Analysis(Parsing/Parser)-Semantic Analysis-Code Optimization-Code Generation-Symbol Table Management -Error Detection and Reporting-Cousins of Compiler: Preprocessor-Assemblers-Loaders-Linkers-Grouping of Phases: Front End and Back End-Passes-Reducing the Number of Passes-Compiler Construction Tools-Scanner Generator-Parser Generator-Syntax-Directed Translation Engines-Automatic Code Generator-Data-Flow Engines **Lexical Analysis** -Introduction-Definition of Lexical Analysis-Role of Lexical Analyser: Issues in Lexical Analysis-Tokens, Patterns, Lexemes- Attributes for Tokens-Lexical Errors-Panic Mode Error Recovery Strategy-Input Buffering:Buffer Methods-Buffer Pairs-Sentinels-Specification of Tokens-Recognition of Tokens:Finite AUTOMATA-NFA-DFA-Regular Expression to NFA-Conversion of NFA to DFA-Minimisation of DFA Optimisation of

DFA from Regular Expression-LEX Tool-Declarations-Transition Rules-Auxiliary Procedures-Lexical Library.

Unit- II

Syntax Analysis-Introduction-Role of the Parser:Error Handling-Error Recovery Strategies-Writing Grammars-Grammars-Definition-Type of Grammar-Context-free-grammar-A Production(Productions for A)-Derivations using a Grammar-Notations for CFG-Sentential Forms-Parse Tree (Derivation tree)-Yield of Parser Tree. **Parsing**-Introduction-Types of Parsing:Top down Parsing(Ll(K))-Bottom up Parsing(LR(K))-Shift Reduce Parsing-Operator Precedence Parsing:Detailed Steps for Solving Operator Precedence Parsing Problems-Error Recovery in Operator Precedence Parsing-Handling Errors during Reductions-LR Parsers:SLR Parser-Canonical LR Parser-LALR Parser.

Unit- III

Intermediate Code Generation-Introduction-Generation of Intermediate Code:Representation of intermediate language-Types of three address statement-Implementation of three address Code-styles of syntax directed Translations-Declarations:Declaration in a procedure- Translation scheme for declaration in a procedure-Declaration in nested procedures-Assignment statement: Syntax directed translation scheme Ready using Temporary names-Addressing array elements-Boolean Expression:Numerical representation-Flow of control statements - Case Statements - Backpatching-Procedural calls-Calling the Procedure - Type Conversion

Unit- IV

Code Generation-Issues in the Design of Code Generator : Input to the code Generator - Target programs-Memory management -Instruction Selection - Register Allocation -Evaluation Order -The Target machine -Runtime Storage Management: Static allocation -Stack allocation - Basic Blocks and flow Graphs: Basic Block -Transformation on Basic Block - Flow graph - Loops-Next use Information -A Simple Code Generator : Code Generation- Code Generation Algorithm - Register and Address Descriptors-Function Gatereg()-Conditional Statements -DAG

Representation of Basic Blocks: DAG for Basic Block - DAG Construction -Applications of DAGS-Peephole Optimisation : Definition Goals-Method

Unit- V

Code Optimisation - Introduction : Criteria for code Improving Transformation -Getting Better Performance -An Organisation for an Optimising Compiler - Principal sources of optimisation : function -Preserving Transformations -loop Optimisation -Optimisation of Basic Blocks: Basic Blocks-Basic Block Optimisation -Building Expression DGAs-Introduction to Global Data Flow Analysis: Point and paths-Reaching Definitions-Global Data Flow Analysis-Dataflow Analysis of Structured Programs-Dataflow Equations for Reaching Definitions-Computation of"gen" and "kill" - Computation of "in" and "out"-Dealing with loops - Representation of sets.

Text book:

1. Dr.Venkatesh R., Dr. Uma Maheshwari N. & Ms.Jeyanthi S., *Compiler Design*, Yes Dee Publishing Pvt. Ltd., India, 2015.

Chapters:

Unit- I : 1.1 to 1.7, 2.1 to 2.8.

Unit- II : 3.1 to 3.5, 4.1 to 4.5.

Unit- III : 5.1 to 5.9.

Unit- IV : 6.1 to 6.9.

Unit- V : 7.1 to 7.4.

Reference Books:

1.Alfred V.Aho & Ravi Sethi Jeffrey D.Ullman, *Compilers Principles, Techniques and Tools,* Pearson Education, 3rd Edition, 2007.

2. D.Chithra, *Principles of Compiler Design*, CBS, 2nd Edition, 2011.

3. Alfred V.Aho, Ravi Sethi Jeffrey D.Ullman, *Compilers Principles, Techniques and Tools*, Darling Kindersley (India), 1st Edition, 2007.

4. Sandeep Saxena & Rajkumar Singh Rathore, *Compiler Design*, S.Chand and Co. Ltd., 2nd Edition, 2013.

5. Aho, Ravi Sethi, Ullman, *Compilers,* Narosa Publishing House, 2nd Edition, 2006.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Elective III

Title of the Paper	**: Project**	
Semester	**: VI**	**Contact Hours: 5**
Sub Code	**: 17JPR6**	**Credits : 5**

The students are allowed to develop their project within our campus with the help of the internal staff members.

In the first review the students submit their title of the project and synopsis, and also submit the determination of the modules.

In the second review 50% of the project is completed and demonstrate the project.

In the final review the students prepare the power point presentation. The oral is must for the completion of the project.

This report will be evaluated 80 marks for external examiner and 20 marks for internal examiner.

Annexure – 12

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited **(3rd Cycle)** with Grade **A+ & CGPA 3.51** by NAAC

CBCS

DEPARTMENT OF COMPUTER APPLICATIONS - UG

(w.e.f. 2017-2018 Batch onwards)

Skill Based Elective - VI

Title of the Paper : Android Lab
Semester : VI **Contact Hours : 2**
Sub Code : 17SEJ6P **Credits : 2**

Programming List:

1. Develop an application that uses GUI components, Font and Colors.

2. Develop an application that uses Layout Managers and event listeners.

3. Develop a native calculator application.

4. Write an application that draws basic graphical primitives on the screen.

5. Develop an application that makes use of database.

6. Develop an application that makes use of RSS Feed.

7. Implement an application that implements Multi threading.

8. Develop a native application that uses GPS location information.

9. Implement an application that writes data to the SD card.

10. Implement an application that creates an alert upon receiving a message.

11. Write a mobile application that creates alarm clock.