

**D.K.M COLLEGE FOR WOMEN**  
**VELLORE - 1**



**(AUTONOMOUS)**

**B.Sc Computer Science**

**SYLLABUS**

**Under**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**[With effect from the year 2019 – 2020]**

**D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS)  
DEPARTMENT OF COMPUTER SCIENCE**

**PROGRAMME EDUCATIONAL OBJECTIVES**

**PEO1:** Graduates will have skills and knowledge to excel in their professional career in Computer Science and its related disciplines.

**PEO2:** Graduates will be ethically and socially responsible solution providers in Computer Science and successfully pursue higher education in reputed institutions.

**PROGRAMME OUTCOME**

**PO1: Problem Analysis:** To identify, formulate and analyze complex Computer Science and Applications problems in the areas of hardware, software, theoretical Computer Science to reach significant conclusions by applying Mathematics, Natural sciences, Accounts, Computer Science and Applications principles.

**PO2: Design & Development of Solutions:** To design and build a system, component, process or a program for complex problems by factoring in all the requirements and various design tradeoffs, with appropriate consideration for the public health and safety, cultural, social and environmental factors

**PO3: Modern Tool Usage:** To create, select and apply state of the art tools and techniques in designing, developing and testing a computing system or its component.

**PO4: Ethics:** To apply professional ethics and cyber regulations, responsibilities and pledge to the norms of professional computing practice.

**PO5:Environment and Sustainability:** To demonstrate the knowledge of sustainable development of computing systems/products/solutions with an understanding of the impact of these solutions on the Society and Environment.

**PO6: Life – long Learning:** To spot the need for and engage in lifelong learning to cope up with the rapidly evolving disciplines of Computer Science and applications domains.

**D.K.M COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE – 1**  
**DEPARTMENT OF B.Sc., COMPUTER SCIENCE**  
**with effect from 2019 – 2020**

**CBCS PATTERN**

**The course of study and scheme of Examination**

**SEMESTER – I**

SN O	PART	COURSE TITLE		In s/ H rs	Cr edi t	Title of the paper	MAXIMUN MARKS		
							CI A	UNI. EXAM	TOTAL
1	I	Language	Paper – 1	6	4	Language	25	75	100
2	II	English	Paper – 1	6	4	Foundation English – I	25	75	100
3	III	Core(T)	Paper – 1	7	4	Digital Logic and Programming in C	25	75	100
4	III	Core Practical	Practical 1	3	3	Programming in C	40	60	100
5	III	Allied	Paper – 1	6	5	Mathematics I	25	75	100
6	IV	EVS		2	2	EVS	25	75	100
		<b>TOTAL</b>		<b>30</b>	<b>22</b>		<b>165</b>	<b>435</b>	<b>600</b>

**SEMESTER II**

SN O	PART	COURSE TITLE		Ins /H rs	Cr edi t	Title of the paper	CIA	UNI. EXA M	TOTAL
7	I	Language	Paper – 2	6	4	Language	25	75	100
8	II	English	Paper – 2	4	4	Foundation English – II	25	75	100
9	III	Core(T)	Paper – 2	6	4	C++ and Data Structure	25	75	100
10	III	Core practical	Practical – 2	3	3	C++ and Data Structure	40	60	100
11	III	Allied	Paper – 2	6	5	Mathematics II	25	75	100
12	III	VE		3	2	VE	–	50	50
13	IV	Soft skill		2	1	Soft skill for Linguistic Communication	–	50	50
		<b>TOTAL</b>		<b>30</b>	<b>23</b>		<b>140</b>	<b>460</b>	<b>600</b>

### SEMESTER III

S NO	PART	COURSE TITLE		I n s/ H rs	Cr edi t	Title of the paper	CI A	UNL. EXA M	TOT AL
14	I	Language	Paper – 3	6	4	Language	25	75	100
15	II	English	Paper – 3	6	4	Foundation English – III	25	75	100
16	III	Core(T)	Paper – 3	5	4	Visual Programming and DBMS	25	75	100
17	III	Core Practical	Practical – 3	3	3	Visual Programming and DBMS	40	60	100
18	III	Allied	Paper – 3	6	5	Statistical Methods and their applications-I	25	75	100
19	IV	Skilled Based	Practical 1	2	2	Open Source Software	–	50	50
20	IV	Non major	Paper – 1	2	2	Introduction to Information Technology	–	50	50
		<b>TOTAL</b>		<b>30</b>	<b>24</b>		<b>140</b>	<b>460</b>	<b>600</b>

### SEMESTER –IV

							CI A	UNL. EXA M	TOT AL
21	I	Language	Paper – 4	6	4	Language	25	75	100
22	II	English	Paper – 4	6	4	Foundation English –IV	25	75	100
23	III	Core(T)	Paper – 4	5	4	ASP.NET	25	75	100
24	III	Core practical	Practical – 4	3	3	ASP.NET	40	60	100
25	III	Allied	Paper – 4	6	5	Statistical Methods and their applications-II	25	75	100
26	III	Skill based	Practical – 2	2	2	Microprocessor	–	50	50
27	IV	Non – Major	Paper – 2	2	2	Internet and its Applications	–	50	50
		<b>TOTAL</b>		<b>30</b>	<b>24</b>		<b>140</b>	<b>460</b>	<b>600</b>

**Internship Training Program during summer vocation with an extra credit = 1**

<b>SEMESTER – V</b>									
<b>SN O</b>	<b>PART</b>	<b>COURSE TITLE</b>		<b>Ins /H rs</b>	<b>Cr edi t</b>	<b>Title of the paper</b>	<b>CIA</b>	<b>UNI. EXAM</b>	<b>TOT AL</b>
28	III	Core (T)	Paper – 5	6	4	Advanced Java Programming	25	75	100
29	III	Core (T)	Paper – 6	6	4	Programming with Python	25	75	100
30	III	Core practical	Practical – 5	3	3	Advanced Java Programming	40	60	100
31	III	Core practical	Practical – 6	3	3	Programming with Python	40	60	100
32	III	Elective – I	Paper – 1	5	3	1. Operating System 2. Computer Graphics	25	75	100
33	III	Elective – II	Paper – 2	5	3	1. Data Communication and Networking. 2. Digital Image Processing	25	75	100
34	IV	Skill Based	Practical – 3	2	2	Operating System Lab	–	50	50
		<b>TOTAL</b>		<b>30</b>	<b>22</b>		<b>180</b>	<b>470</b>	<b>650</b>
<b>SEMESTER –VI</b>									
							<b>CIA</b>	<b>UNI. EXAM</b>	<b>TOT AL</b>
35	III	Core (T)	Paper – 7	6	4	Android Programming	25	75	100
36	III	Core (T)	Paper – 8	6	4	Cloud Computing	25	75	100
37	III	Core practical	Practical – 7	3	3	Android Programming	40	60	100
38	III	Core practical	Practical – 8	3	3	Cloud Computing	40	60	100
39	III	Elective III	Paper – 3	5	3	1. Software Engineering 2. E – Commerce	25	75	100
40	III	Elective IV	Paper – 4	5	3	1. Design and analysis of Algorithms 2. Data Analytics	25	75	100
41	IV	Skill Based	Practical – 4	2	2	Multimedia	–	50	50
42		Extension activity		–	3		100	–	100
		<b>TOTAL</b>		<b>30</b>	<b>25</b>		<b>280</b>	<b>470</b>	<b>750</b>
<b>Mini Project during summer vocation with an extra credit = 2</b>									

**TOTAL CREDITS**  
**B.Sc [COMPUTER SCIENCE]**

<b>PART</b>	<b>SUBJECT</b>	<b>PAPERS</b>	<b>CREDITS</b>	<b>TOTAL CREDITS</b>	<b>MARKS</b>	<b>TOTAL MARKS</b>
Part I	Language s	4	4	16	100	400
Part II	English	4	4	16	100	400
Part III	Allied	4	5	20	100	400
Part III	Elective	4	3	12	100	400
Part III	Core	8	4	32	100	800
Part III	Core Practical	8	3	24	100	800
Part IV	EVS	1	2	2	100	100
Part IV	Value Education	1	2	2	50	50
Part IV	Skill Based (Practical 4)	4	2	8	50	200
Part IV	Non – Major	2	2	4	50	100
Part IV	Soft Skill	1	1	1	50	50
Part V	Extensio n Activities	–	3	3	100	100
	<b>Total</b>	<b>41</b>		<b>140</b>		<b>3800</b>

# DIGITAL LOGIC AND PROGRAMMING IN C

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
I		CORE PAPER -1	7	105	7	105	0	0	4

## COURSE OBJECTIVE

- This paper develops the basics concept used in design and analysis of digital systems and to develop the programming skills using C Language.

## COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Learn the basic concepts of digital logic Circuits and Boolean Algebra Concept.	K1
CO2	Understand about Combinational and sequential circuits.	K2
CO3	Learn the fundamental concept of C Programming language.	K1
CO4	To implement Array, Functions and structures	K2
CO5	To create files & pointers and apply its operations in program.	K3

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

## MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	M	S	S	M
CO2	S	S	S	M	M	S
CO3	S	S	M	S	M	M
CO4	S	S	S	M	S	S
CO5	S	S	M	S	M	S

*S-Strong*

*M-Medium*

*L-Low*

# SYLLABUS

## UNIT I: NUMBER SYSTEMS AND BOOLEAN ALGEBRA

23 Hrs

**NUMBER SYSTEMS:** Decimal - Binary - Octal - Hexadecimal - Number Base Conversions – Complements - 1's Complement - 2's complement - 9's Complement – 10's Complements - binary Codes - BCD – Excess-3 - Gray code.

**BOOLEAN ALGEBRA:** Definition of Boolean algebra – Theorems of Boolean algebra - Boolean Functions – Digital Logic gates and Truth Table.

**SIMPLIFICATION OF BOOLEAN FUNCTIONS:** The Map Method – Two Variable Map - Three Variable Map - Four Variable Map - Don't Care Conditions – Product of Sums Simplification.

## UNIT-II: COMBINATIONAL AND SEQUENTIAL CIRCUITS

19 Hrs

**COMBINATIONAL LOGIC:** Adders - Sub tractors – multiplexers - de-multiplexers – encoders – decoders.

**SEQUENTIAL LOGIC:** Flip flops: Basic Flip flop - Clocked RS Flip flop – D Flip flop – JK Flip flop – T Flip flop - Triggering of Flip Flops: Master Slave.

**REGISTERS AND COUNTERS:** Registers - 4 bit Register - Ripple Counter.

## UNIT –III: C BASICS AND CONTROL CONSTRUCTS

21 Hrs

C fundamentals- Keywords - Variables – Data types - Operators- Constants- Expression – Library Functions- Decision making branching and looping – continue - break

## UNIT IV: ARRAYS, FUNCTIONS AND STRUCTURES

21 Hrs

Arrays-Multi dimensional arrays- String- User defined functions- Call by Value and reference-Recursion- Storage classes- Structures and Union

## UNIT – V: POINTERS AND FILES

21 Hrs

Pointers- Pointer operations and Arithmetic- File management in C : File opening and closing- I/O operations on files - Error handling during I/O operations - Random access to files - Command line arguments

**Distribution of Marks: Theory: 70% and Problems:30%**

## TEXT BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Morris Mono M.	“Digital Logic and Computer Design	PHI Latest Pub. Ed.	2007
2	Balaguruswamay.E	Programming in ANSI C	TMH	2012



## REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Albert Paul Malvino, Donald P Leach	Digital principles and applications	TMH	1996.

## WEB RESOURCES

1. [https://www.electronics-tutorials.ws/logic/logic\\_1.html](https://www.electronics-tutorials.ws/logic/logic_1.html)
2. <https://www.programiz.com/c-programming/>
3. <https://www.geeksforgeeks.org/c-language-set-1-introduction/>

## TEACHING METHODOLOGY

- Class room teaching
- Group discussions
- Seminars
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNERS

1. Ms. A. SIVASANKARI, HOD, Dept of Computer Science
2. Mrs.R.SHOBANA, Assistant Professor, Dept of Computer Applications
3. Mrs.B.ARULMOZHI , HOD, Dept of Computer Applications

## PROGRAMMING IN C

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
I		CORE PRACT-I	3	45	0	0	3	45	3

### COURSE OBJECTIVE

- This practical develops the basic programming skills in C Language.

### SYLLABUS

1. Summation of Series: Sin(x) (Compare with built in functions)
2. Summation of Series Cos(x) (Compare with built in functions)
3. Counting the no. of vowels, consonants, words, white spaces in a line of text
4. Reverse a string & check for palindrome without built in string function
5.  ${}^n P_r$ ,  ${}^n C_r$  in a single program using function
6. Matrix Addition, subtraction and multiplication
7. Linear Search of a number in an array
8. Sorting an array in ascending and descending order
9. Finding maximum and minimum of list of numbers
10. Call by value and call by reference of functions
11. Employee pay bill using structure
12. Preparing an EB bill using file

**Distribution of Marks: Program Output with Viva voce: 85% and Record:15%**

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3. Mrs.B.ARULMOZHI , HOD, Dept of Computer Applications

## C++ AND DATA STRUCTURE

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
II		CORE PAPER-II	6	90	6	90	0	0	4

### COURSE OBJECTIVE

- This paper helps the students to quickly move into the world of C++ with Object Oriented Programming and Data structure concept.

### COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To learn the Basic Concept of Object Oriented Programming Language.	K1
CO2	To understand how to implement OOPs Concept in C++.	K2
CO3	Understanding the Data Structure Concept	K2
CO4	To develop the algorithms for various data structure operations and applications.	K3
CO5	To pertain the data in trees and Graphs.	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	S	S	M	M
CO2	S	S	S	S	M	S
CO3	S	M	S	S	M	M
CO4	S	S	S	M	S	S
CO5	S	S	S	M	M	S

*S-Strong      M-Medium      L-Low*

# SYLLABUS

## UNIT I – BASICS OF OOP’S and C++

18 Hrs

Basic Concepts of OOP - Benefits of OOP - Applications of OOP- Introduction to C++ - Streams Classes & Member functions of stream class - manipulators - -I/O in C++ -Formatted & - Unformatted Console I/O Operations.

## UNIT II – CLASSES AND OBJECTS AND FILE OPERATIONS 19 Hrs

Classes and Objects - Constructors and Destructors - Types of Constructors - Defining member functions - Inline function - Friend function- Function Overloading - Operator overloading - Inheritance - Types of Inheritance - Virtual Functions and Polymorphism. Files-File operations.

## UNIT III – BASICS OF DATA STRUCTURES

18 Hrs

Definition of Data structure – Primitive and Composite data types – Arrays, Operations on Arrays - Stack – Operations on stack – Infix to Post fix Conversion - Queue – Operations on Queue – Circular Queues.

## UNIT IV -COMPOSITE DATA STRUCTURES

17 Hrs

Singly Linked List – Operations, - Doubly Linked List – Operations – Sorting and Searching.

## UNIT V –TREES AND GRAPHS

18 Hrs

Trees and Graphs: Binary Trees - Operations - Tree Traversals- Recursive In order, Preorder, Post order - Graph - Definition, Types of Graphs - Graph Traversal – DFS & BFS

**Distribution of Marks: Theory :80% and Problems:20%**

### TEXT BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	E. Balagurusamy	Object Oriented Programming with C++	Tata McGraw Hill	1995
2.	Nell Dale	C++ with Data structure	Narosa Publications	2000

## REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Reema Thareja	Object Oriented Programming with C++	Oxford University Press	2015
2.	Varsha H. Patil	Data Structures using C++	Oxford University Press	2012

## WEB RESOURCES

1. <https://www.tutorialspoint.com/cplusplus/>
2. <https://www.guru99.com/cpp-tutorial.html>
3. [https://www.tutorialspoint.com/data\\_structures\\_algorithms/](https://www.tutorialspoint.com/data_structures_algorithms/)

## TEACHING METHODOLOGY

- Class room teaching
- Group discussions and Seminars
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNERS

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2. Mrs P.SIVAGAMI, Assistant Professor, Dept of Computer Science
3. Mrs. B.ARULMOZHI , HOD, Dept of Computer Applications

## C++ AND DATA STRUCTURE

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
II		CORE PRACTICAL – 2	3	45	0	0	45	45	3

### COURSE OBJECTIVE

- This practical help us to develops the Object Oriented Programming Concept using C++ and Data Structure.

### C++ CONCEPTS

1. Operator Overloading
2. Friend function
3. Inheritance
4. Polymorphism
5. Files

### DATA STRUCTURE

1. Implement PUSH, POP operations of stack using Arrays
2. Implement add, delete operations of queue using Pointers
3. Conversions of infix to postfix using stack operations
4. Addition of two polynomials using Arrays
5. Binary tree traversals [in-order, pre-order, and post-order] using linked list.
6. Depth First Search and Breadth first Search for Graphs.

**Distribution of Marks: Program Output with Viva voce: 85% and Record: 15%**

### SYLLABUS DESIGNERS

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2. Mrs P.SIVAGAMI, Assistant Professor, Dept of Computer Science
3. Mrs. B.ARULMOZHI , HOD, Dept of Computer Applications

## VISUAL PROGRAMMING AND DBMS

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
III		Core Paper – 3	5	75	5	75	-	-	4

### COURSE OBJECTIVE

- The objective of the **course** is to present an introduction to **database management** systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a **DBMS**.
- It also develop the students about Data Base Creation and Manipulation, along with Application development in Visual Basic 6.0 with database connectivity.

### COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1 – K4)
CO1	Explain the structure and model of the relational database system	K2
CO2	Design a database based on a data model considering the normalization to a specified level	K3
CO3	Explain the basics of Oracle and PL/SQL.	K1
CO4	Learn to use Visual basic Integrated Development Environment and language basics.	K2
CO5	Learn the concept of Arrays, Objects and Database connectivity.	K3

*Knowledge Level – K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	S	S	S	S
CO2	S	S	S	M	S	S
CO3	S	S	M	M	S	M
CO4	S	S	S	S	S	M
CO5	S	S	S	M	S	M

*S – Strong                      M – Medium                      L – Low*

# SYLLABUS

## UNIT I – BASICS OF DBMS AND RELATIONAL ALGEBRA

16 Hrs

Purpose of Database – Overall system Structure – Entity Relationship Model – Mapping Constraints – Keys – E – R Diagram. Relational Algebra – Tuple And Domain Relational Calculus.

## UNIT II – NORMALIZATION AND SQL

16 Hrs

Normalization Using Functional Dependencies – First Normal Form – Second Normal Form – Third Normal Form – Fourth Normal Form and BCNF. Structured Query Language – Basic Structure – Set Operation – Aggregate Function

## UNIT III – BASICS OF ORACLE

12 Hrs

Introduction to ORACLE – ORACLE Commands: DDL – DML and DCL Statements – ORACLE Built – in Functions – PL/SQL: Blocks – Control statements – Loops – Cursor Management – Triggers – Functions & Procedure – Data types – Exception Handling.

## UNIT IV – VB INTEGRATED DEVELOPMENT ENVIRONMENT

15 Hrs

IDE Integrated Development Environment – Creating Controls and Properties – Variables and Data types – Message box–List box – Combo box – Control and Loop structures – Procedures and Functions

## UNIT V – ARRAYS AND ODBC

16 Hrs

Arrays – Records – Control Arrays – MS Flex Grid Control– VB objects – Menus – Mouse Events– Dialog boxes – MDI form – Do events and sub main – Error trapping – File Handling – File System control – ODBC using RDO and DAO – OLE fundamentals

**Distribution of Marks: Theory: 75% and Applications**

**:25% TEXT BOOKS**

S.No	Authors	Title	Publishers	Year of Publication
1.	Abraham Silberschartz, H.F. Korth and S.Sudarshan	Database System Concepts	McGraw Hill Publication.	2012
2	Gary Cornell	VB6 from the ground up	McGraw Hill Publication.	2017



## REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Singh	Database Systems: Concepts, Design & Applications,	Pearson Education	2010
2.	Gerald V.Post	DBMS- Designing and Business Applications	McGraw Hill Publications.	2012
3.	Deitel and Deitel	VB6 How To Program	Person Education	2010
4.	Dan Rahmel	Visual Basic Programmer's Reference	McGraw Hill Publications.	2018
5.	Noel Jerke	VB6:The Complete Reference	McGraw Hill Publications.	2017
6.	Raghu Ramakrishnan	Database Management Systems	McGraw Hill Publications.	2013
7.	Mark L Gillenson	Fundamentals of Database Management Systems	Mark L Gillenson John Wiley & Sons, Inc.	2011
8.	Seyed M. Tahaghoghi	Learning MySQL	O'Reilly Media, Inc.	2016

## WEB RESOURCES

1. <https://www.capterra.com/database-management-software/>
2. <https://www.vbtutor.net/vbtutor.html>
3. <https://docs.microsoft.com/.../get-started/visual-basic/tutorial-console>

## TEACHING METHODOLOGY

- o Class room teaching.
- o Group discussions
- o Seminars
- o Demo using systems
- o Chart/Assignment
- o Smart Class room

## SYLLABUS DESIGNERS

1. Mrs. B.Arulmozhi , Assistant Professor and Head, Department of Computer Science
2. Mrs. S. Shanthi, Assistant Professor, Department of Computer Science

## **VISUAL PROGRAMMING AND DBMS**

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
III		Core Pract – III	3	45	0	0	3	45	3

### **COURSE OBJECTIVE**

This practical develops the application development capability in VB 6.0 along with basic database designing.

### **SYLLABUS**

#### **SQL : DDL and DCL.**

1. Data Definition and Manipulation Queries.
2. SQL Aggregate function and SET Operation.
3. Multiple Tables and Nested Queries (Simple Joins).

#### **PL/SQL**

4. PL/SQL.
5. Function and Procedures.
6. Subprograms and Packages.

#### **VISUAL PROGRAMMING**

7. Generate Simple Application to process Students Mark Sheet
8. Create Quiz Application using common controls
9. Generate Electricity Bill System with backend created with Oracle
10. Telephone Directory Maintenance with MS Access Backend.

**Distribution of Marks: Program Output with Viva voce: 85% and Record:15%**

#### **SYLLABUS DESIGNERS**

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2. Mrs. S. Shanthi, Assistant Professor, Department of Computer Science

## OPEN SOURCE SOFTWARE

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
III		Skill Based Pract – I	2	30	0	0	2	30	2

### COURSE OBJECTIVE

This practical enables the student to learn open source software like HTML, CSS, JAVA SCRIPT, VB SCRIPT and XML in Web Designing. It also helps to expose students to free open source software environment and introduce them to use open source packages.

### COURSE OUTCOME

On the successful completion of the course, students will be able to learn

CO Number	CO Statement	Knowledge Level (K1 – K4)
CO1	Learn to create HTML web pages and their links	K1
CO2	Can Design various cascading Style sheets	K3
CO3	Learn to implement Dynamic web pages using JAVA Script	K2
CO4	Apply knowledge to Create Dynamic web pages using VB Script	K3
CO5	Learn the basics of XML	K2

*Knowledge Level – K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	S	M	S	S
CO2	S	S	S	M	S	S
CO3	S	S	M	M	S	S
CO4	S	S	S	S	S	M
CO5	S	M	S	M	S	M

*S – Strong*

*M – Medium*

*L – Low*

# SYLLABUS

## UNIT I – BASIC OF HTML

6 Hrs

Basic- Introduction to HTML -List -Creating table -Linking document frames

## UNIT II – STYLE SHEET & ITS PROPERTIES

6 Hrs

Graphics to HTML doc -Style sheet basic -Add style to document -Creating style sheet rule  
-Style sheet properties

## UNIT III – JAVASCRIPT

6 Hrs

Introduction to JavaScript - JavaScript syntax -Data type -Variable -Array -Operator and  
expression -Looping constructor - Function -Dialog box.

## UNIT IV – VB SCRIPT

6 Hrs

VB script - Introduction to VB script -Variables - Constants - Arrays - Operators - Control  
structures - Functions & Methods

## UNIT V – XML

6 Hrs

XML - Introduction to XML – Basic programming – Elements and Attributes – Document  
Type Definitions (DTD) – Schema.

## PRACTICAL EXERCISE

1. Create a static web page which defines all text formatting tags of HTML in tabular format
2. Create a web page including list, image and links.
3. Create a web page implementing Inline and Embedded Stylesheets
4. Create a web page implementing External Stylesheet.
5. Create an array, display its content using JavaScript
6. Create a web page that utilizes cookie information using JavaScript.
7. Create a dynamic web page which prints Fibonacci series from 1 to 10 in VBScript
8. Create a dynamic web page which prints factorial of a given number in VBScript
9. Create a simple XML file and also create dynamic web page in which XML tags are used.

## TEXT BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1	Steven Holzner	HTML Black Book	ACM Digital Library	2011

## REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	I. Bayross	Web enable commercial application development using HTML, DHTML, Javascript	BPB publication	2015
2.	Sam Key	VBScript: Programming Success in a day	Kindle Edition	2015
3.	Jon Duckett	JavaScript & JQuery: Interactive Front-End Web Development	Wiley Publications	2011
4.	Anders Moller Michael Schwartzbach	An Introduction to XML and Web Technologies	Pearson Education	2013
5.	Deitel & deitel	Internet & World Wide Web how to program	Pearson Education	2015
6.	Williamson Heather	XML : The Complete Reference	English Paperback	2016
7.	Kathleen halata	Internet programming with VB script & Java script	Course technology publications	2019
8.	Kogent Learning Solution	Html 5.0 In Simple Steps	Dreamtech Press	2010

## **WEB RESOURCES**

1. <http://archive.oreilly.com/oreillyschool/courses/introxml/Introduction%20to%20XML%20v1.pdf>
2. <https://www.w3schools.com/html/>
3. <https://javascript.info/>
4. <https://www.guru99.com/vbscript-tutorials-for-beginners.html>

## **TEACHING METHODOLOGY**

- o Class room teaching.
- o Group discussions
- o Seminars
- o Demo using systems
- o Chart/Assignment
- o Smart Class room

## **SYLLABUS DESIGNERS**

1. Mrs. B.Arulmozhi , Assistant Professor and Head, Department of Computer Science
2. Mrs. S. Shanthi, Assistant Professor, Department of Computer Science

## INTRODUCTION TO INFORMATION TECHNOLOGY

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
III		Non Major Paper – 1	2	30	2	30			2

### COURSE OBJECTIVE

This course develops the students to know the basic concept of hardware, software and networking in a computer system.

### COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1 – K4)
CO1	Learn the anatomy and history of Digital Computer	K1
CO2	Understands about storage and IO devices of computer	K2
CO3	Learn to use Microsoft Office Products	K3
CO4	Understand the usage of Multimedia	K2
CO5	Attain a wide knowledge regarding Internet and usage of World Wide Web.	K3

*Knowledge Level – K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	S	S	M	S	S
CO2	S	S	S	S	S	M
CO3	S	M	S	M	M	S
CO4	S	S	S	S	S	M
CO5	L	S	M	S	S	S

*S – Strong                      M – Medium                      L – Low*

# SYLLABUS

## UNIT I – BASICS OF COMPUTER

6 Hrs

Introduction: History of Computer - Parts of Computer System - Hardware Devices - Software – Anatomy of Digital Computer.

## UNIT-II – PARTS OF COMPUTER

6 Hrs

Memory Units – Storage Devices- Input Devices-Output Devices-Number System.

## UNIT-III – MS-OFFICE

7 Hrs

Microsoft Word - Microsoft Excel - Microsoft PowerPoint-MS-Access.

## UNIT-IV – WORKING WITH MULTIMEDIA

5 Hrs

Introduction to Multimedia - Images - Sound -Video – Text- Text Generation-  
Multimedia Applications.

## UNIT-V – INTERNET AND WORLD WIDE WEB

6 Hrs

Introduction to Internet and World Wide Web- E-Mail Basics – Computer Networks.

**Distribution of Marks: Theory: 75% and Applications:25%**

## TEXT BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Alexis Leon	Fundamentals of Information Technology	Vikas Publication	2011



## REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1	S.Jain	MS OFFICE 2007 Training Guide	BPB Publications	2010
2	Paul Deital, Harvey Deital, Abbey Deital	Internet and World Wide Web	Pearson Education	2018
3	Gaurav Bhatnager, Shikha Mehta, Sugata Mitra	Introduction to Multimedia Systems	Academic Press	2010
4	Bittu Kumar	Microsoft Office 2010	V & S Publishers	2013
5	E.Balagurusamy	Fundamentals of Computers	McGraw Hill Edition	2010
6	S.Gokul	Multimedia Magic	BPB	2011
7	Ron Mansfield	Working in Microsoft Office	Tata McGraw Hill	2007
8	Paul Whitehead	Internet and World Wide Web	Maran Graphics Publications	2000

## WEB RESOURCES

1. [http://www.just.edu.jo/~mqais/CIS99/PDF/Ch.01\\_Introduction\\_%20to\\_computers.pdf](http://www.just.edu.jo/~mqais/CIS99/PDF/Ch.01_Introduction_%20to_computers.pdf)
2. [https://www.lamission.edu/learningcenter/docs/LRC%20Microsoft%20Office\\_Word%202007%20Workshop.pdf](https://www.lamission.edu/learningcenter/docs/LRC%20Microsoft%20Office_Word%202007%20Workshop.pdf)
3. [https://www.tutorialspoint.com/basics\\_of\\_computer\\_science/basics\\_of\\_computer\\_science\\_multimedia.htm](https://www.tutorialspoint.com/basics_of_computer_science/basics_of_computer_science_multimedia.htm)

## TEACHING METHODOLOGY

- o Class room teaching.
- o Group discussions
- o Seminars
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- o Chart/Assignment
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## SYLLABUS DESIGNERS

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2. Mrs. S. Shanthi, Assistant Professor, Department of Computer Science

## ASP.NET

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
IV		Core Theory – 4	5	75	5	75	3	45	4

### COURSE OBJECTIVE

- This course helps the students to quickly move into the world of ASP.NET with website designing
- To Create a Web form with server controls.
- To Separate page code from content with code-behind pages, page controls, and components,
- To Display dynamic data from a data source by using ADO.NET and data binding,
- To Debug .NET Active Server Pages.

### COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1 – K4)
CO1	Learn Technical knowledge	K1
CO2	Apply technical knowledge and perform specific technical skills,	K2
CO3	Design, Debug and Deploy web applications using ASP.NET	K3
CO4	Use ASP.NET controls in web applications.	K3
CO5	Create database driven ASP.NET web applications and web services	K4

*Knowledge Level – K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	M	M	L	L
CO2	M	M	S	M	M	M
CO3	S	S	S	S	M	S
CO4	S	S	S	S	S	S
CO5	S	S	S	S	S	S

*S – Strong*

*M – Medium*

*L – Low*

# **SYLLABUS**

## **UNIT I: ASP.NET BASICS**

Introduction to ASP.NET: .NET Framework (CLR, CLI, BCL)-ASP.NET Basics- ASP.NET Page Structure- Page Life Cycle. Controls: HTML Server Controls - Web Server Controls - Web User Controls - Validation Controls - Custom Web Controls.

## **UNIT II: FORM**

Form validation: Client side validation - Server side validation - Validation Controls: Required Field- Comparison Range - Calendar Control - Ad rotator Control - Internet Explorer Control. State Management: View State - Control State - Hidden Fields – Cookies - Query Strings - Application State - Session State.

## **UNIT III: ADO.NET**

Architecture of ADO .NET - Connected and Disconnected Database - Create Database - Create connection Using ADO.NET Object model - Connection Class - Command Class - Data Adapter Class - Dataset Class- Display data on data bound controls and Data Grid.

## **UNIT IV: DATABASE ACCESSING**

Database accessing on Web Applications: Data Binding Concept with web - Creating Data Grid - Binding standard web server controls - Display data on web form using Data Bound Controls.

## **UNIT V: XML**

Writing Datasets to XML - Reading datasets with XML - WEB services: Remote method call using XML, SOAP - Web service description language - Building and Consuming a web service - Web Application deployment.

### **Practical For Classes :**

1. Individual project development was done.

**Distribution of Marks: Theory 80% and Applications: 20%**

### TEXT BOOKS

S.No	Authors	Title	Publishers	Year Of Publication
1.	Bill Evjen , Devin Rader , Farhan Muhammad,Scott Hanselman , Srivakumar	Professional ASP.NET 1.1	Wrox publication	2008

### REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year Of Publication
1	Matthew Mac Donald	The Complete Reference ASP.NET	Tata McGraw-Hill Edition	2009
2	Vikas	Net Programming	Gupta Publications	2013
3	Kogent Solutins	ASP.NET 3.5 Black Book	Dream Tech Press	2010
4	Chris Hart, John Kauffman, David Sussman, Chris Ullman	Beginning ASP.NET 2.0 with C#	Dream Tech Press	2009
5	Matthew Mac Donald,Adam Freeman	ASP.NET 4 In C# 2010	Wiley India Pvt Ltd	2010
6	<b>Jesse Liberty</b> , Dan Hurwitz	Programming ASP .NET	<b>O'Reilly</b> Media, Inc	2008
7	Imar Spaanjaars	Beginning ASP.NET 4: In C# and VB	Wiley India Pvt Ltd	2010
8	Marco Bellinaso	ASP.NET 2.0 Website Programming	Wiley publishing inc	2010

## **WEB RESOURCES**

1. <https://docs.microsoft.com/en-us/aspnet/tutorials>
2. <https://www.javatpoint.com/asp-net-tutorial>
3. <https://www.w3schools.com/asp/default.asp>

## **TEACHING METHODOLOGY**

- o Class room teaching
- o Group discussions and Seminars
- o Chart/Assignment
- o Simulation Model
- o Smart Class room

## **SYLLABUS DESIGNERS**

1. Mrs. G. SANGEETHALAKSHMI, Head & Assistant Prof, Dept of Computer Applications.
2. Mrs. R. LAKSHMI, Assistant Prof, Dept of Computer Applications.
3. Mrs. G.ARUNKUMARI, Assistant Prof, Dept of Computer Applications.

## ASP. NET

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
IV		Core Practical – 4	3	45	0	0	3	45	3

### COURSE OBJECTIVE

- This practical help us to develop website and project creation using ASP.NET.

### SYLLABUS

1. Design a Simple page introducing you, how old you are, what you do, what you like and dislike. Modify the introduction to include a bullet list of what you do and List the 5 things you like most and dislike as numbered Lists. Create another page about your favorite Hobby and Link it to your main page. Put a quote on new page.
2. Design a new HTML file and do the following:
  - a. Add a Horizontal Rule.
  - b. Add a link to E-mail Id.
  - c. Add a Line break.
  - d. Add Date to the bottom of the page.
  - e. Add the Footer.
  - f. Add some text describing multiple headings and Paragraphs.
3. Design a web Form for an Online Library. This form must be able to accept the membership ID of the Person borrowing a book, the name and Id of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the book is to be returned. You can enhance the look of the page by using Various ASP.net controls.
4. Design an ASP.Net Web Forms using the Applications.
5. Develop an ASP.Net Program using controls.
6. Develop an ASP.Net Program to illustrate Validation Controls.

7. Develop an ASP.Net Program using Web User controls.
8. Develop an ASP.Net Program using Data Binding with Server controls.
9. Develop an ASP.Net Program using Database Programming concepts in ADO.Net.
10. Develop an ASP.Net Program, to illustrate Web service.

**Distribution of Marks: Program Output with Viva voce: 85% and Record: 15%**

### **SYLLABUS DESIGNERS**

4. Mrs. G. SANGEETHALAKSHMI, Head & Assistant Prof, Dept of Computer Applications.
5. Mrs. R. LAKSHMI, Assistant Prof, Dept of Computer Applications.
6. Mrs. G.ARUNKUMARI, Assistant Prof, Dept of Computer Applications.

## MICROPROCESSOR

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
IV		SB Practical – 2	2	30	0	0	2	30	2

### COURSE OBJECTIVE

- This practical helps to introduce the students with the architecture and operation of typical microprocessors and microcontrollers.
- To familiarize the students with the programming and interfacing of microprocessors and microcontrollers.
- To provide strong foundation for designing real world applications using microprocessors and microcontrollers.

### COURSE OUTCOME

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Learn basic knowledge of microprocessor	K1
CO2	Acquire technical knowledge and perform specific technical tools,	K2
CO3	Understands the basic concept of OPCODE	K3
CO4	Use Microprocessor to perform logical and arithmetic operations	K3
CO5	Create controls for digit transactions programs	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyse*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	M	M	L	L
CO2	M	M	S	M	M	M
CO3	S	S	S	S	M	S
CO4	S	S	S	S	S	S
CO5	S	S	S	S	S	S

*S – Strong*

*M – Medium*

*L – Low*



## **SYLLABUS**

**UNIT I – BASICS OF MICROPROCESSOR** **6 Hrs**

Introduction – 8085 Programming model – Instruction Classification – Instruction word size – OP code format.

**UNIT II – ADDRESSING MODES** **6 Hrs**

Write, Assemble and Execute a Simple Program – Addressing Modes

**UNIT III – 8085 INSTRUCTION SET** **6 Hrs**

8085 Instruction Set – Data Transfer Instructions – Arithmetic Instruction – Logic and Bit Manipulation Instructions – Branch Instructions – Machine Control Instructions.

**UNIT IV – MICROPROCESSOR ARCHITECTURE** **6 Hrs**

Microprocessor Architecture and its Operations.

**UNIT V – COUNTERS AND STACK** **6 Hrs**

Counters and Time Delays – Stack and Subroutines

### **MICROPROCESSOR LAB**

1. 8 Bit Addition
2. 16 Bit Addition
3. 8 Bit Multiply
4. 8 Bit Division
5. BCD Addition
6. 8 Bit Subtraction
7. Arranging In Ascending Order
8. 1's Complement
9. 2's Complement
10. Arrange In Descending Order
11. Block Move
12. Binary To ASCII
13. ASCII To Binary
14. ASCII To BCD
15. BCD To ASCII

**TEXT BOOKS**

<b>S.No</b>	<b>Authors</b>	<b>Title</b>	<b>Publishers</b>	<b>Year of Publication</b>
1.	Ramesh Gaonkar	Microprocessor Architecture, Programming and Applications with the 8085	Penram International Publishing (India) Pvt Ltd Fifth Edition.	2010

**REFERENCE BOOKS**

<b>S.No</b>	<b>Authors</b>	<b>Title</b>	<b>Publishers</b>	<b>Year of publication</b>
1	Soumitra Kumar Mandal	Microprocessors and Microcontrollers Architecture, Programming and Interfacing Using 8085, 8086 and 8051	Penram International Publishing (India) Pvt Ltd First Edition.	2011
2	Liu and Gibson	Microprocessor System the 8086 /8088 Family	Prentice hall	2011
3	R S Gaonkar	Microprocessor, Architecture, Programming and Application	Prentice hall	2012
4	Barry B. Brey	The Intel Microprocessors	Mc.Graw Hill Publications	2013
5	Mohammed Ali Mazidi, Janice Gillispie Mazidi, Rolin D. McKinlay	8051 Microcontroller and Embedded Systems:Using Assembly and C	Pearson Education	2011
6	M.Saravanan, N.Senthil Kumar, S.Jeevananthan	Microprocessors and Microcontrollers	Pearson Education	2010
7	A.P. Godse, D.A. Godse	Microprocessor	Technical Publications	2010
8	John Crisp	Introduction to Microprocessors and Microcontrollers	Elsevier	2005

## **WEB RESOURCES**

1. <https://docs.microsoft.com/en-us/microprocessor/tutorials>
2. [https://www.tutorialspoint.com/microprocessor/microprocessor\\_overview.html](https://www.tutorialspoint.com/microprocessor/microprocessor_overview.html)
3. <https://www.geeksforgeeks.org/introduction-of-microprocessor/>

## **TEACHING METHODOLOGY**

- o Class room teaching.
- o Group discussions
- o Seminars
- o Demo using systems
- o Chart/Assignment

## **SYLLABUS DESIGNERS**

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2. Ms. D. SARANYA, Assistant Professor, Department of Computer Applications
3. Mrs. R. LAKSHMI, Assistant Professor, Department of Computer Applications

## INTERNET AND ITS APPLICATIONS

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
IV		Non Major -2	2	30	2	30	0	0	2

### COURSE OBJECTIVE

This course helps to equip students the basics of Internet usage and prepare them for digital world. It also helps to understand internet potential applications such as e-mail, news groups, chat, video, etc.. Internet and web development processes.

### COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To learn Basic Concept of Internet.	K1
CO2	To learn how to use Web browser	K2
CO3	To learn how to use E-mail id -sending and Receiving mails	K3
CO4	Introduction to HTML.	K2
CO5	To learn about E-marketing	K3

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	S	M	S	S
CO2	S	S	M	S	M	S
CO3	S	S	S	M	S	S
CO4	S	S	S	S	M	M
CO5	S	S	S	M	M	S

*S-Strong M-Medium L-Low*

## **SYLLABUS**

### **UNIT - I INTERNET BASICS**

**6 Hrs**

Introduction to Computers - Programming Language types - History of Internet Personal computers - World Wide Web.

### **UNIT - II WEB BROWSERS**

**7 Hrs**

Web Browsers - Internet Explorer - Connecting to Internet - Features of Internet explorer - Searching the Internet- Online help and tutorials - File Transmission Protocol (FTP)-Browser settings.

### **UNIT - III E-MAIL**

**5 Hr**

Electronic mail - Creating an E-mail id - Sending and Receiving mails – Attaching a file - Instance messaging - Other web browsers.

### **UNIT - IV HTML**

**6 Hrs**

Introduction to HTML headers – Linking - Images - Special characters and line breaks Unordered lists - Simple HTML programs.

### **UNIT - V DIGITAL CASH**

**6 Hrs**

E-marketing - Consumer tracking - Electronic advertising - Search engine – CRM - Credit card payments - Digital cash and e-wallets -Micro payments- Smart card

**Distribution of Marks: Theory :80% and Applications:20%**

### **TEXT BOOK**

<b>S.No</b>	<b>Authors</b>	<b>Title</b>	<b>Publishers</b>	<b>Year of Publication</b>
1.	A.M. Deitel and P.J. Deitel, A.B. Goldberg	Internet and world wide web: How to program	Pearson Education Ltd	2013

S.No	Authors	Title	Publishers	Year of Publication
1.	Harley han	The Internet	TMH	2016
2.	Gretchen McCulloch	Because Internet: Understanding the New Rules of Language	PenguinPublishing Group	2019
3	Anders Moller Michael Schwartzbach	An Introduction to XML and Web Technologies	Pearson Education	2009
4	Steven Holzner	HTML Black Book	ACM Digital Library	2016
5	Kogent Learning Solution	Html 5.0 In Simple Steps	Dreamtech Press	2010
6	P.Rizwan Ahmed	Internet and its Applications	Margham Publications	2010
7	Gralla	How the Internet Works	Pearson Education	2012
8	Farrel Adrian	TheInternet and its Protocols	Elsevier Science	2013

### WEB RESOURCES

- 1.[https://www.tutorialspoint.com/internet\\_technologies/internet\\_overview.htm](https://www.tutorialspoint.com/internet_technologies/internet_overview.htm)
- 2.[https://www.tutorialspoint.com/basics\\_of\\_computer\\_science/basics\\_of\\_computer\\_science\\_internet.html](https://www.tutorialspoint.com/basics_of_computer_science/basics_of_computer_science_internet.html)

### TEACHING METHODOLOGY

- o Class room teaching
- o Group discussions
- o Seminars
- o Chart/Assignment
- o Smart Class room

### SYLLABUS DESIGNERS

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2. Mrs. D.SARANYA, Assistant Prof, Dept of Computer Applications.

## ADVANCED JAVA PROGRAMMING

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Core Theory-5	6	90	6	90	0	0	4

### COURSE OBJECTIVES

- This course is to provide the ability to design console based, GUI based and web based applications in Java.
- Students will also be able to understand integrated development environment to create, debug and run multi-tier and enterprise-level applications in Java.

### COURSE OUTCOMES

On successful completion of the course, students will be able to

CO Number	CO statement	Knowledge Level (K1-K4)
CO1	Understand the basic concepts of Java in OOPs	K1
CO2	Handling the Exception ,communication between threads and Applets	K2
CO3	Designing the patterns and analyze different types of classes.	K3
CO4	Specify appropriate drivers for the database connectivity in JDBC	K3
CO5	Analyzing different types of Client side technologies	K4

*Knowledge level: K1 – Remember; K2 – Understand; K3 – Apply; K4 –Analyze.*

### MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	L	L	S	S	S
CO2	S	S	S	M	M	S
CO3	M	S	S	M	M	S
CO4	M	S	S	M	L	M
CO5	M	M	S	M	M	S

*S- Strong; M – Medium; L-Low*

# SYLLABUS

## UNIT-I INTRODUCTION TO JAVA

15 Hrs

Introduction to Java – Features of Java - Data Types – Variables - Arrays - Operators - Control Statements – Console I/O

## OOPS IN JAVA

Class and Methods -Classes - Objects - Constructors - Overloading - Method - Access Control - String Class - Inheritance – Overriding methods - Using super - Abstract class

## UNIT-II PACKAGES , THREADS

16 Hrs

Packages - Access Protection - Importing Packages - Interfaces - Exception Handling - Thread - Synchronization – Runnable Interface -Inter thread Communication

## APPLET AND AWT

Applet Class – AWT Controls - Label - Textbox - List box - Combo box - Check box - Radio button - Menus - Frame - Dialog box - Tab control - Working With Graphics - Layout Manager

## UNIT-III DESIGN PATTERNS

20 Hrs

Introduction to Design patterns - Catalogue for Design Pattern - Factory Method - Pattern - Prototype Pattern - Singleton Pattern - Adapter Pattern - Proxy Pattern -Decorator Pattern - Command Pattern - Template Pattern - Mediator Pattern - A Simple Servlets - The Servlet API – Servlet Package - Handling HTTP - Request and Response.

## UNIT-IV JDBC

20 Hrs

JDBC - Introduction - JDBC Architecture - JDBC Classes and Interfaces – Database Access with MySQL - Steps in Developing JDBC application - Creating a New Database and Table with JDBC - Working with Database Metadata

## JAVA NETWORKING

Java Networking - Basics of Networking - Networking in Java- Socket Program using TCP/IP - Socket Program using UDP- URL and Internet address classes.

## UNIT-V CLIENT-SIDE PROGRAMMING

19 Hrs

Client-side programming technologies - Form design using HTML, XHTML and DHTML and CSS - Client side validation Using Java Script - Content Structuring using XML - Adding Interactivity with AJAX - Query Framework - Server-side Programming - Web Servers - Handling request and response - Handling Form data.

**Distribution of Marks :Theory 75% and Problems 25%**

## TEXT BOOKS

S. No	Authors	Title	Publishers	Year of publication
1	C. Muthu	Programming in Java	TMH	2009
2	Prasanalakshmi.B	Advanced Java Programming	CBS Publishing	2015



## REFERENCE BOOKS

S. No	Authors	Title	Publishers	Year of Publication
1	Patrick Naughton & Herbert Schildt	The Complete Reference: Java 2	Tata McGraw Hill	2012
2	S.Sagayaraj, R.Denis, P.Karthik D.Gajalakshmi,	Java Programming	Universities Press	2017
3	Cay S. Horstmann	Core Java	Prentice hall	2018
4	Charlie Hunt, Binu John	Java Performance	Pearson Education	2011
5	Joshua Bloch	Effective Java	Pearson Education	2018
6	Uttam Roy	Advanced Java Programming	Oxford University Press	2009
7	Mike McMillan	Advanced Java Programming	O'Reilly Media	2012
8	Kanika Lakshmi	Advanced Java Programming	Pearson Education	2013

## WEB SOURCES

1. <http://leetcode.com/>
2. <https://www.coursera.org/>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNERS

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2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science

## **PRACTICAL: ADVANCED JAVA PROGRAMMING**

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Core Practical-5	3	45	0	0	3	45	3

### **COURSE OBJECTIVES**

Students will design and implement programs in the **Java programming** language that make strong use of classes , objects , Applet , ODBC and Network Concept.

### **SYLLABUS**

1. Program to implement class and object .
2. Program to implement inheritance
3. Program to implement Compile time polymorphism
4. Program to implement run time polymorphism
5. program to implement file handling
6. Program to implement Applet Concept.
7. Program to implement AWT controls with layout Manager
8. Application using synchronization such as Thread based, Class based and synchronized statements.
9. CRUD operation Using JDBC
10. Displaying Query Results in a Table
11. TCP Socket
12. UDP Socket

**Distribution of Marks: Program Output with Viva voce:85% and Record :15%**

### **SYLLABUS DESIGNER**

1. Mrs. B.Arulmozhi , Assistant Professor and Head, Department of Computer Science
2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science
3. Mrs.S.Shanthi, Assistant Professor, Department of Computer Science

## PROGRAMMING WITH PYTHON

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Core Theory-6	6	90	6	90	0	0	4

### COURSE OBJECTIVE

- This course helps students to Understand Python programming concept.
- It helps students to implement python concepts in real world applications like Machine Learning and Data science.

### COURSE OUTCOME

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Understanding Basis of Python Programming.	K1
CO2	Read, write, execute by hand simple Python programs. Structure simple Python programs for solving problems.	K2
CO3	Decompose a Python program into functions and Represent compound data using Python lists, tuples, dictionaries	K3
CO4	Read and write data from/to files in Python programs	K3
CO5	Develop CRUD applications in python and Data visualization concept using various Ad-ons.	K3

*Knowledge Level- K1- Remember, K2- Understand, K3- Apply, K4- Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	S	S	S	M
CO2	S	M	S	M	S	M
CO3	S	S	S	M	S	S
CO4	M	S	S	S	S	S
CO5	M	M	S	M	S	M

*S- Strong; M- Medium; L- Low*

# SYLLABUS

## UNIT I: PYTHON FUNDAMENTALS

18 Hrs

Introduction – Python interpreter and interactive mode - Character set – Tokens- Input and output functions - Data types –Mutable and Immutable Data type -Variables- Expressions- Statements - Operators- Comments

## UNIT II: CONTROL FLOW, FUNCTIONS

19 Hrs

Conditionals: Boolean values and operators - Conditional (if) - Alternative (if-else) - Chained conditional (if-elif-else) - Iteration: While, For, Break, Continue, Pass; Fruitful functions: Return values, Parameters, Local and Global scope, Recursion; Strings: String slices, Immutability, String functions and methods; Lists as arrays. Illustrative programs: square root, GCD.

## UNIT III: LISTS, TUPLES, DICTIONARIES

17 Hrs

Lists: List operations - List slices - List methods - List loop - Mutability - Aliasing - Cloning lists, List parameters - Tuples: Tuple assignment - Tuple as return value - Dictionaries: Operations and methods - Illustrative programs: Selection Sort - Histogram.

## UNIT IV: FILES, MODULES, PACKAGES

18 Hrs

Files and exception - Text files - Reading and Writing files - Command line arguments, Errors and Exceptions, Handling exceptions, Modules, Packages; Illustrative programs: Copy file.

## UNIT V: DATA BASE USING SQLite AND DATA VISUALISATION

19 Hrs

CRUD Operations in python using SQLite : Create Table, Insert, Delete, Select, Update Queries – Add on Third Party Libraries : Numpy – Keras – Pantas - Matplotlib- Seaborn

**Distribution of Marks: Theory 75% and Problems 25%**

### TEXT BOOKS

S.No	Authors	Title	Publishers	Year of publication
1	Allen B. Downey	Think Python: How to Program	Shroff/O'Reilly Publishers, 2 <sup>nd</sup> edition, Updated for Python 3	2016

## REFERENCE BOOKS

S. No	Authors	Title	Publishers	Year Of Publication
1.	John V Guttag	Introduction to Computation and Programming Using Python, Revised and expanded Edition	MIT Press	2013
2.	Robert Sedgewick, Kevin Wayne, Robert Dondero	Introduction to Programming in Python: An Inter- disciplinary Approach	Pearson India Education Services Pvt. Ltd	2016
3.	Timothy A. Budd	Exploring Python II	Mc- Graw Hill Education (India) Private Ltd	2015
4.	Paul Barry	Head-First Python	O'Reilly Publishers	2016
5.	Zed A. Shaw	Learn Python3 The Hard way	Addison-Wesley	2016
6.	Guido van Rossum and Fred L. Drake Jr.	An Introduction to Python- Revised and updated for Python 3.2	Network Theory Ltd	2011
7.	Avid Ascherand MARK LUTZ	Learning Python	O'Reilly Media	2013
8.	Wes McKinney	Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython	O'Reilly Media	2011

## WEB SOURCES

1. <http://greenteapress.com/wp/think-python/>
2. <http://www.guru99.com/python-tutorials.html>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNER

1. Mrs. B. Arulmozhi , Assistant Professor and Head, Department of Computer Science
2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science

## PROGRAMMING WITH PYTHON

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Core Practical-6	3	45	0	0	3	45	3

### COURSE OBJECTIVE

This course helps students to develop basic python applications as well as Data visualization concept.

### SYLLABUS

1. Program to implement simple python operations like Arithmetic and String Handling
2. Program to implement control structures using logical and relational operators.
3. Program to implement functions and Modules in python
4. Program to implement Collections: List, Tuples
5. Program to implement Collections: Sets, Dictionary
6. Program to implement Arrays using Numpy
7. Program to implement file Handling : Data streams, Access modes, Read/Write/Seek
8. Program to implement Exceptional Handling: hierarchy, raise, assert
9. Program to implement OOPs: Classes, Objects
10. Program to implement Inheritance Concept
11. Program to implement Data Visualization using Add on Tools
12. Program to Implement CRUD operations using SQLite

**Distribution of Marks: Program Output with Viva voce: 85% and Record: 15%**

### SYLLABUS DESIGNER

1. Mrs. B. Arulmozhi , Assistant Professor and Head, Department of Computer Science
2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science
3. Mrs.V.Lakshmi Pratha, Assistant Professor, Department of Computer Science

## 1. OPERATING SYSTEM

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Elective -I	5	75	5	75	0	0	3

### COURSE OBJECTIVES

Students will demonstrate a knowledge of process control, threads, concurrency, memory management scheduling, I/O and files, distributed systems, security, networking. Student teams will implement a significant portion of an operating system.

### COURSE OUTCOMES

On successful completion of the course, students will be able

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Analyze the structure of OS and basic architectural components involved in OS design	K1
CO2	Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system	K2
CO3	Describe about Memory allocation in distributed OS.	K4
CO4	Implementing Swapping and Virtual Memory management.	K3
CO5	Interpret the mechanisms adopted for file sharing in distributed Applications	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	P3O2	PO3	PO4	PO5	PO6
CO1	M	L	M	L	S	M
CO2	M	M	M	M	L	M
CO3	S	M	S	M	S	L
CO4	M	S	L	M	L	M
CO5	M	S	S	M	L	M

*S-strong M-Medium L-Low*

# SYLLABUS

## UNIT – I OPERATING SYSTEM BASICS

15 Hrs

Basic Concepts of Operating System - Services of Operating System-Classification of Operating System- Architecture and Design of an Operating System-Process Management -Introduction to Process-Process State -PCB - Process Scheduling - Inter process Communication.

## UNIT –II OPERATING SYSTEM SCHEDULING

16 Hrs

CPU Scheduling: Introduction - Types of CPU Scheduler - Scheduling Criteria - Scheduling Algorithms - FCFS Scheduling – SJF Scheduling;-Priority Scheduling - Round-Robin Scheduling- Multilevel Queue Scheduling - Deadlock - Basic Concept of Deadlock- Deadlock Prevention - Deadlock Avoidance- Deadlock - Detection and Recovery.

## UNIT- III MEMORY MANAGEMENT

14 Hrs

Memory Management - Basic Concept of Memory - Address Binding; Logical and Physical Address Space- Memory Partitioning - Memory Allocation - Protection-Fragmentation and Compaction.

## UNIT – IV SWAPPING

16 Hrs

Swapping- Using Bitmaps - Using Linked Lists- Paging-Mapping of Pages to Frames - Hierarchical Page Tables- Segmentation - Virtual Memory - Basic Concept of Virtual Memory- Demand Paging - Transaction Look aside Buffer (TLB) - Inverted Page Table- Page Replacement Algorithms.4

## UNIT –V FILE MANAGEMENT

14 Hrs

File Management - Basic Concept of File-Directory Structure-File Protection-Allocation Methods – Various Disk Scheduling algorithms.

### Self Study: Unix Operating System

**Distribution of Marks: Theory 75% and Applications 25%**

### TEXT BOOKS

S. No	Authors	Title	Publishers	Year of publication
1	Abraham Silberschatz Peter B. Galvin, G. Gagne	Operating System Concepts	Addison Wesley Publishing Co Sixth Edition	2014



## REFERENCE BOOKS

S. No	Authors	Title	Publishers	Year of publication
1	W. Stallings	Operating systems - Internals and Design Principles	PEARSON 6th Edition	2013
2	Charles Patrick Crowley	Operating Systems: A Design-Oriented Approach	PEARSON 4th Edition	2013
3	Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau	Operating Systems: Three Easy Pieces	Arpaci-Dusseau Publishers	2015
4	Andrew Tanenbaum	Modern Operating Systems	Prentice Hall	2014
5	Naresh Chauhan	Principles of Operating Systems	Oxford Higher Education	2014
6	D.M. Dhamdhare	Operating systems - A Concept-based Approach	PEARSON 8th Edition	2013
7	Avi Silberschatz, Greg Gagne, and Peter Baer Galvin	Operating System Concepts Essentials	O'Reily Media 2 Edition	2010
8	Albert S. Woodhull, Andrew S. Tanenbaum	Operating Systems: Design and Implementation	Prentice hall	2018

## WEB RESOURCES

- [https://www.tutorialspoint.com/operating\\_system/index.htm](https://www.tutorialspoint.com/operating_system/index.htm)
- <https://www.javatpoint.com/os-tutorial>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNER

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2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science
3. Dr. R.Hamsaveni, Assistant Professor, Department of Computer Science

## 2. COMPUTER GRAPHICS

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Elective - I	5	75	5	75	0	0	3

### COURSE OBJECTIVE

- The course provides the overviews of learning about Computer Graphics, hardware, Transformation techniques and Animation

### COURSE OUTCOME

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Learning the fundamental concepts of Computer graphics and Gain knowledge about graphics hardware devices and software used.	K1
CO2	To familiarize the student with the concept of two dimensional graphics and their transformations.	K2
CO3	Analyze the technique of three dimensional graphics and their transformations.	K3
CO4	Understanding the importance of illumination and color models.	K2
CO5	To learn about clipping techniques, morphing and fractals.	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	S	M	S	S
CO2	L	S	M	M	S	M
CO3	S	M	S	M	S	S
CO4	S	S	M	S	M	M
CO5	M	S	S	M	M	M

*S-Strong, M-Medium and L-Low*

# SYLLABUS

## UNIT I: INTRODUCTION

14 Hrs

Survey of computer graphics - Overview of graphics systems – Video display devices - Raster scan systems - Random scan systems - Graphics monitors and Workstations - Input devices - Hard copy Devices - Graphics Software - Output primitives – Points and lines - Line drawing algorithms - Loading the frame buffer - Line function - Circle and Ellipse generating algorithms - Pixel addressing and object geometry - Filled area primitives.

## UNIT II: TWO DIMENSIONAL GRAPHICS

16 Hrs

Two dimensional geometric transformations – Matrix representations and homogeneous coordinates - Composite transformations - Two dimensional viewing – Viewing pipeline - Viewing coordinate reference frame - Window-to-viewport - Coordinate transformation - Two dimensional viewing functions - Clipping operations – Point - Line - Polygon clipping algorithms.

## UNIT III: THREE DIMENSIONAL GRAPHICS

15 Hrs

Three dimensional concepts: Three dimensional object representations – Polygon surfaces- Polygon tables - Plane equations – Polygon meshes: Curved Lines and surfaces - Quadratic surfaces - Blobby objects - Spline representations – Bezier curves and surfaces - B-Spline curves and surfaces - Transformation And Viewing: Three dimensional geometric and modeling transformations – Translation, Rotation, Scaling, composite transformations: Three dimensional viewing – viewing pipeline, viewing coordinates, Projections, Clipping: Visible surface detection methods.

## UNIT IV: ILLUMINATION AND COLOUR MODELS

15 Hrs

Light sources – Basic illumination models – Halftone patterns and dithering techniques; Properties of light – Standard primaries and chromaticity diagram: Intuitive color concepts – RGB color model – YIQ color model – CMY color model – HSV color model – HLS color model: Color selection.

## UNIT V ANIMATIONS & REALISM

15 Hrs

Animation Graphics: Design of Animation sequences – Animation function – Raster animation – Key frame systems – Motion specification – Morphing – Tweening - Computer Graphics Realism: Tiling the plane – Recursively defined curves – Koch curves – C curves Dragons – Space filling curves – Fractals – Grammar based models – Turtle graphics.

**Distribution of Marks: Theory 75% and Applications 25%**

## TEXT BOOKS

S.No	Author	Title	Publisher	Year of Publication
1	John F. Hughes, Andries Van Dam, Morgan Mc Guire ,David F. Sklar , James D. Foley, Steven K. Feiner and Kurt Akeley	Computer Graphics: Principles and Practice	3rd Edition, Addison-Wesley Professional,2013	2013

## REFERENCES

S.No	Author	Title	Publisher	Year of Publication
1	Donald Hearn and M. Pauline Baker, Warren Carithers.	Computer Graphics With Open GL	4th Edition, Pearson Education	2010
2	Chopra Rajiv	Computer Graphics	S. Chand Publications	2017
3	Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, Erik Reinhard, KelvinSung, and AK Peters	Fundamental of Computer Graphics,	CRC Press, 2010.	2010
4	William M. Newman and Robert F.Sproull,	Principles of Interactive Computer Graphics	Tata McGrawHill	2012
5.	James D. Foley, Andries Van Dam, Steven K. Feiner	Computer Graphics: Principles And Practice in C	Addison Wesley Publications	2014
6.	Sumanta Guha	Computer Graphics Through OpenGL	CRC Press	2015
7.	A.P.Godse	Computer Graphics	Technical Publications	2010
8.	Fabio Ganovelli, Massimiliano Corsini, Sumanta Pattanaik, Marco Di Benedetto	Introduction to Computer Graphics	CRC Press	2015

## WEB RESOURCES

1. [https://www.tutorialspoint.com/computer\\_graphics/index.htm](https://www.tutorialspoint.com/computer_graphics/index.htm)
2. <https://www.javatpoint.com/computer-graphics-tutorial>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment, Simulation Model
- Smart Class room

## SYLLABUS DESIGNER

1. Mrs. B.Arulmozhi , Assistant Professor and Head, Department of Computer Science
2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science
3. Dr. M. Vasumathy, Assistant Professor, Department of Computer Science

# 1. DATA COMMUNICATION AND NETWORKING

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Elective - II	5	75	5	75	0	0	3

## COURSE OBJECTIVE

Students learn about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems.

## COURSE OUTCOME

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To study the concepts of communication networks, protocols and their Performance	K2
CO2	To study the concepts of transmission Medium and Error Control	K3
CO3	To learn about Switching Concept	K3
CO4	To Study about the X.25layers	K3
CO5	To apply routing Algorithms and understand various internetworking Devices	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

## MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	M	S	S
CO2	M	S	M	S	S	M
CO3	S	S	S	L	M	S
CO4	S	M	S	M	S	L
CO5	S	M	S	M	S	M

*S-Strong, M- Medium, L-Low*

# SYLLABUS

## UNIT I – BASICS OF DATA COMMUNICATION

15 Hrs

Introduction to Data Communication, Network, Protocols & standards and standards organizations - Line Configuration - Topology -Transmission mode - Classification of Network - OSI Model - Layers of OSI Model.

## UNIT II – TRANSMISSION MEDIUM

14 Hrs

Parallel and Serial Transmission – DTE-DCE Interface - Modems - Guided Media - Unguided Media - Types of Error - Error Detection - Error Corrections.

## UNIT III – MULTIPLEXING AND SWITCHING

16 Hrs

Multiplexing - Types of Multiplexing - Multiplexing Application - Telephone system - Project 802 - Ethernet - Token Bus - Token Ring - Circuit Switching - Packet Switching - Message switching - Connection Oriented and Connectionless services.

## UNIT IV – ISDN AND X.25 LAYER

14 Hrs

History of Analog and Digital Network- Access to ISDN - ISDN Layers - Broadband ISDN - X.25 Layers.

## UNIT V – NETWORKING DEVICES

15 Hrs

Repeaters - Bridges - Routers - Gateway - Routing algorithms - TCP/IP Network and Transport layer - World Wide Web.

**Distribution of Marks: Theory 80% and Applications: 20%**

## EXT BOOKS

S.No	Authors	Title	Publishers	Year of publication
1	Behrouz a. Forouzan	Data Communications and Networking	TMH	2011

## REFERENCE BOOK

S.no	Authors	Title	Publishers	Year of Publication
1	Andrew Tanenbaum	Computer Networks	Tata McGraw Hill	2013
2	Jean Warland	Communication Networks(A first Course) - Second Edition	WCB/McGraw Hill	2006
3.	William Stallings	Data and Computer Communications	Pearson Education	2012
4.	James F. Kurose, Keith W. Ross	Computer Networking	Pearson Education	2010
5.	Bruce S. Davie, Larry L. Peterson	Computer Networks: A Systems approach	Tata McGraw Hill	2010
6.	Moussavi	Data Communication and Networking	Cengage Learning	2014
7.	Tomasi, Wayne	Introduction to Data Communication And Networking	Pearson Education	2013
8.	Leon Garcia	Communication Networks	Tata McGraw Hill	2011

## WEB RESOURCES

1. [https://www.tutorialspoint.com/data\\_communication\\_computer\\_network/index.html](https://www.tutorialspoint.com/data_communication_computer_network/index.html)
2. <https://www.guru99.com/data-communication-computer-network-tutorial.html>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNER

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3. Dr. R.Hamsaveni, Assistant Professor, Department of Computer Science

## 2. DIGITAL IMAGE PROCESSING

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		Elective - II	5	75	5	75	0	0	3

### COURSE OBJECTIVE

- The course provides the overviews learning about Digital image processing techniques and image enhancement, segmentation and color image processing techniques.

### COURSE OUTCOME

- . On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Learning the fundamental concepts of Digital image processing Techniques	K1
CO2	To familiarize the student with the concept image enhancement Techniques	K2
CO3	Analyze the technique of Image restoration process	K3
CO4	Understand and learn the importance of color image processing	K2
CO5	To learn the concept of image compression and image segmentation techniques	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4- Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	S	M	S	S
CO2	L	S	M	M	S	M
CO3	S	M	S	M	S	S
CO4	S	S	M	S	M	M
CO5	M	S	S	M	M	M

*S-Strong, M-Medium and L-Low*



# SYLLABUS

## UNIT 1: DIGITAL IMAGE FUNDAMENTALS

14 Hrs

Light and Electromagnetic spectrum - Components of Image processing system - Image formation and digitization concepts - Neighbors of pixel - Adjacency connectivity - Regions and boundaries, Distance measures, Applications.

## UNIT 2: IMAGE ENHANCEMENTS

15 Hrs

Image Enhancements: Basic gray level transformations - Histogram processing - Using arithmetic/Logic operations - Smoothing spatial filters, Sharpening spatial filters - In Frequency domain: Introduction to the Fourier transform and frequency domain concepts - Smoothing frequency - Domain filters - Sharpening frequency domain filters.

## UNIT 3: IMAGE RESTORATION

14 Hrs

Various noise models - Image restoration using spatial domain filtering - Image restoration using frequency domain filtering - Estimating the degradation function - Inverse filtering.

## UNIT 4: COLOUR IMAGE PROCESSING

15 Hrs

Color fundamentals - Color models - Color transformation - Smoothing and Sharpening - Color segmentation

## UNIT 5: IMAGE COMPRESSION AND IMAGE SEGMENTATION

15Hrs

Introduction - Image compression model - Error-free compression - Lossy compression - Detection of discontinuities - Edge linking and boundary detection - Thresholding

### Distribution of Marks: Theory 75% and Applications

#### 25% TEXT BOOKS

S.No	Author	Title	Publisher	Year of Publication
1	Rafel C. Gonzalez and Richard E. Woods	Digital Image Processing	Pearson Education	2015
2	Bhabatosh Chanda and Dwijesh Majumder	Digital Image Processing	Publisher : PHI	2016

## REFERENCE BOOKS

S.No	Author	Title	Publisher	Year of Publication
1	Rafel C. Gonzalez and Richard E. Woods	Fundamentals of Digital Image Processing	Publisher : PHI	2015
2	Anil K Jain	Digital Image Processing Using Matlab	Pearson Education	2016
3	Kenneth R Castleman	Digital Image Processing	Pearson Education	2010
4	S Jayaraman, S Esakkirajan, T Veerakumar	Digital Image Processing	McGraw Hill	2009
5	Jonathan M. Blackledge	Digital Image Processing	Woodhead Publishers	2011
6	Bhabatosh Chanda and Dwijesh Majumder	Digital Image Processing	Publisher : PHI	2016
7	Dr. Sanjay Sharma	Digital Image Processing	Pearson Education	2017
8	S. Annaduarai, R. Shanmugalakshmi	Fundamentals of Digital Image Processing	Pearson Education	2008

## WEB RESORCES

1. <https://www.tutorialspoint.com/dip/index.htm>
2. <https://www.javatpoint.com/digital-image-processing-tutorial>

## TEACHING METHODOLOGY

- o Class room teaching.
- o Group discussions
- o Seminars
- o Demo using systems
- o Chart/Assignment
- o Simulation Model
- o Smart Class room

## SYLLABUS DESIGNER

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2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science
3. Dr. M. Vasumathy, Assistant Professor, Department of Computer Science

## OPERATING SYSTEM LAB

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
V		SB Practical - 3	2	30	0	0	2	30	2

### COURSE OBJECTIVES

This Course helps the student should be able to: Identify and use **UNIX** utilities to create and manage simple file processing operations, organize directory structures with appropriate security, and develop shell scripts to perform more complex tasks.

### COURSE OUTCOME

- On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Learning the fundamental concepts of Unix Operating System.	K1
CO2	To familiarize the student with the concept Bourne Shell	K2
CO3	Analyze the technique of Control Structure.	K3
CO4	Understand and learn the importance of Shell Script File	K2
CO5	To learn the concept of Unix Command and how to apply it.	K3

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	S	M	S	S
CO2	L	S	M	M	S	M
CO3	S	M	S	M	S	S
CO4	S	S	M	S	M	M
CO5	M	S	S	M	M	M

*S-Strong, M-Medium and L-Low*

# SYLLABUS

## UNIT I – UNIX OVERVIEW

6 Hrs

UNIX Overview – The Kernel – Running a command – Files and Directories – Special Files; Problem – solving Approaches in Unix – Using single and compound Unix command – Shell scripts – C programs for solving problems.

## UNIT II – BOURNE SHELL

6 Hrs

Working with the Bourne Shell – Filename Expansion – Shell Meta characters - Shell Variables – Shell Scripts More Shell Facilities and Shell Meta characters.

## UNIT III - SHELL CONTROL STRUCTURE

6 Hrs

Shell Scripts – The for Loop – Choice – Making : The Case statement – Conditional Looping : While and until – The if Statement – The test command – Error Checking – trap command

## UNIT IV – SHELL SCRIPT FILES

6 Hrs

Shell Script Examples – Adding Arithmetic to a Shell : expr – A countdown loop – Printing a Collection of Files – Shell scripts with Multiple options – Passing Arguments to Scripts – Spell Command.

## UNIT V – UNIX COMMANDS

6 Hrs

UNIX Commands like – ls – cat – vi editor – chmod – mv – cp – rm – grep – mkdir – rmdir – chdir with various options

## PRACTICAL PROGRAM

1. Write script to find Prime Test.
2. Write script to find Palindrome Test.
3. Write script to find Fibonacci Series Generation.
4. Write script to find Armstrong No Test.
5. Write script to use User-friendly change of modes (chmod).
6. Write script to see current date, time, username and current directory.
7. Write script to print Nos. as 5,4,3,2,1.
8. Write shell script using for loop to print the following  
1  
1 2  
2 3 3  
3 4 4 4  
4 5 5 5 5
9. Script to find out biggest no.
10. Write script to print given nos. Sum of all digits.

**Distribution of Marks: Program Output with Viva voce: 85% and Record: 15%**

## TEXT BOOKS

S.No	Author	Title	Publisher	Year of Publication
1	Yashavant Kanetkar	Unix Shell Programming	BPB Publication	2018

## REFERENCE BOOKS

S.No	Author	Title	Publisher	Year of Publication
1	Rachel Klee, Douglas A. Host, Richard R. Rosinski, Kenneth H. Rosen	UNIX: The Complete Reference, Second Edition	McGraw-Hill	2007
2	Bach Maurice J	The Design of Unix Operating System	AT&T Bell Labs	2014
3	Stephen G. Kochan, Wood , Patrick	Unix Shell Programming	Sam Publications	2009
4	Liwei Guo, Yong Yue, and Yukun Liu	UNIX Operating System: The Development Tutorial Via UNIX Kernel Services	Springer	2011
5	Uresh Vahalia	UNIX Internals: The New Frontiers	Dorling Kindersley Pvt. Ltd.	2009
6	Dave Taylor	Sams Teach Yourself UNIX in 24 Hours	Sams Tech	2005
7	Sam Key, Millian Quinteros	Unix Operating System Success In A Day	BHP publication	2015
8	Book by Marc Rochkind	Advanced UNIX Programming	Addison-Wesley Professional	2019

## WEB RESOURCES

1. <https://www.tutorialspoint.com/unix/index.htm>
2. <http://www.ee.surrey.ac.uk/Teaching/Unix/>

## TEACHING METHODOLOGY

- o Class room teaching.
- o Group discussions
- o Seminars
- o Demo using systems
- o Chart/Assignment, Simulation Model
- o Smart Class room

## SYLLABUS DESIGNER

1. Mrs. B.Arulmozhi , Assistant Professor and Head, Department of Computer Science
2. Mrs. K. Ayesha, Assistant Professor, Department of Computer Science
3. Ms.P. Ramya, Assistant Professor, Department of Computer Science

## ANDROID PROGRAMMING

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Core Theory-7	6	90	6	90	0	0	4

### COURSE OBJECTIVE

This paper help us to understand the concept of Mobile Application Development in Android Operating System.

### COURSE OUTCOME

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To study the Architecture, Evolution and Features in Android	K1
CO2	To learn about life Cycle of Android	K2
CO3	To develop User Interface	K3
CO4	Uses of Intents and dialogs	K3
CO5	To learn about Android Databases	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	M	S	S
CO2	M	S	M	S	S	M
CO3	S	S	S	L	M	S
CO4	S	M	S	M	S	L
CO5	S	M	S	M	S	M

*S-Strong, M-Medium, L-Low*

# SYLLABUS

## UNIT –I HISTORY OF EMBEDDED DEVICE

18 Hrs

History of Embedded Device Programming - Open Handset Alliance - Introduction to Android - Features and Architecture of Android - Evolution of Android

## UNIT –II TYPES OF ANDROID APPLICATIONS

19 Hrs

Types of Android Applications - Android Design Philosophy - Android Development Tools - Building blocks of Android Application - Resources - Android Application Life Cycle - Android Activity Class.

## UNIT –III FUNDAMENTAL OF ANDROID

17 Hrs

Fundamental Android User Interface design - Introducing Views - Layouts - Creating new Views - Menus.

## UNIT-IV-INTENTS

17 HRS

Introducing Intents - Adapters - Using Internet Resources - Introducing Dialogs.

## UNIT V – TECHNIQUES FOR SAVING DATA

18 HRS

Techniques for saving data - Saving and Loading Files - Databases in Android - Introducing Content Providers.

**Distribution of Marks: Theory 80% and Applications: 20%**

## TEXT BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1	Jerome Di Marzio	Android: A Programmer's Guide	Tata McGraw Hill	2010.

## REFERENCE BOOK

S.No	Authors	Title	Publishers	Year of publication
1	Reto Meier, Wiley	Professional Android 4 Application Development	John Wiley & Sons Inc	2012
2	Dawn Griffiths	Head First Android Development	O'Reilly Media Inc	2015
3	Mark L. Murry	Busy Coder's Guide To Android Development	Common Ware LLC	2011
4	Kristin Marsicano, Brian Gardner, Bill Phillips and Chris Stewart	Android Programming	Pearson Education	2019
5	John Horton	Android Programming for Beginners	Packt Publishing	2015
6.	KARIM YAGHMOUR	Embedded Android: Porting, Extending, and Customizing	Shroff/O'Reilly; First edition	2013
7	Roger Ye	Android System Programming	Packt Publishing Ltd	2017
8	Marko Gargenta and Masumi Nakamura	Learning Android: Develop Mobile Apps Using Java and Eclipse	O'Reilly Media;	2011

## WEB RESOURCES

1. [http://www.android.com/mobile application development/](http://www.android.com/mobile%20application%20development/)
2. <https://www.javatpoint.com/android-tutorial>
3. <https://www.tutorialspoint.com/android/index.htm>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNER

1. Mrs. G.SANGEETHALAKSHMI , Assistant Professor and Head, Department of Computer Application
2. Mrs. N.AMBIGA, Assistant Professor, Department of Computer Application



## **PRACTICAL: ANDROID PROGRAMMING**

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Core Practical-7	3	45	0	0	3	45	3

### **COURSE OBJECTIVE**

This course helps us students to learn about Mobile Application Development in Android Operating System.

### **SYLLABUS**

1. Working with Button, Text View and Edit Text
2. Working with Radio Button and Radio Group
3. Working with Check Box
4. Working with Dialog Box
5. Working with Date Picker
6. Working with Progress Bar
7. Working with Spinner
8. Working with Simple Menu
9. Working Menu with Intents
10. Working with Files

**Distribution of Marks: Program Output with Viva voce: 85% and Record: 15%**

### **SYLLABUS DESIGNER**

1. Mrs. G.SANGEETHALAKSHMI , Assistant Professor and Head, Department of Computer Application
2. Mrs. N.AMBIGA, Assistant Professor, Department of Computer Application

## CLOUD COMPUTING

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Core Theory-8	6	90	6	90	0	0	4

### COURSE OBJECTIVES

- To understand the working concept of cloud computing.
- To familiarize themselves with the lead players in cloud.
- To appreciate the emergence of cloud as the next generation computing paradigm.

### COURSE OUTCOME

On successful completion of this course, students will be able to

CO Number	CO Statement	Knowledge Level(K1-K4)
CO1	Identify the architecture, infrastructure and delivery models of cloud computing	K1
CO2	Articulate the main concepts, key technologies, strengths and limitations of cloud computing	K3
CO3	The core issues of cloud computing such as security, privacy and interoperability	K3
CO4	Evaluating Web tools	K4
CO5	Applying the cloud Services to real time	K3

*K1-Remember; K2 –Understand; K3-Apply; K4-Analyze.*

### MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	S	M	M	S
CO2	S	S	S	S	L	M
CO3	S	S	S	S	L	S
CO4	S	S	S	M	S	S
CO5	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low*

# SYLLABUS

## UNIT –I: CLOUD COMPUTING BASICS

18 Hrs

Fundamentals –Introduction to Cloud Computing, Definition, Characteristics, Components, Cloud provider, SAAS, PAAS, IAAS and Others- Organizational scenarios of clouds, Administering & Monitoring cloud services-benefits and limitations- Deploy application over cloud- Comparison among SAAS, PAAS, IAAS -Cloud computing platforms -Infrastructure as service(Amazon EC2,Platform as Service: Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing )

## UNIT- II : VIRTUALIZATION

17 Hrs

Web-Based Application – Pros and Cons of Cloud Service Development – Web services: SOAP and REST, SOAP versus REST, AJAX- Virtual machine technology- virtualization applications in enterprises, Pitfalls of virtualization Multitenant .

**SOFTWARE:** Multi-entity support, Multi-schema approach- Multitenance using cloud data stores -Data access control for enterprise applications.

## UNIT -III CLOUD INFRASTRUCTURE

17 Hrs

Centralizing Email communications –collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation.

## UNIT -IV CLOUD COMPUTING TECHNOLOGY

19 Hrs

Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications–Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing – Collaborating on Databases – Storing and Sharing Files – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis.

## UNIT -V CLOUD APPLICATION DEVELOPMENT

19 Hrs

OGSA – Sample Use Cases – OGSA Platform Components – OGSi – OGSA Basic Services. Globus Toolkit – Architecture – Programming Model – High Level Services – OGSi.Net. Middleware Solutions- Issues in cloud computing-Implementing real time application over cloud platform Issues in Intercloud environments- QOS Issues in Cloud- Dependability-Datamigration - Streaming in Cloud.

**Distribution of Marks: Theory 75% and Applications: 25%**

**TEXT BOOKS**

<b>S.No</b>	<b>Authors</b>	<b>Title</b>	<b>Publishers</b>	<b>Year of Publication</b>
1	Judith Hurwitz, Bloor.R, Kanfman.M, Halper.F	Cloud Computing	Wiley India Edition	2010

**REFERENCE BOOK**

<b>S.No</b>	<b>Authors</b>	<b>Title</b>	<b>Publishers</b>	<b>Year of Publication</b>
1	Arshdeep Bahga, Vijay Madiseti.	Cloud Computing	Universities Press	August 2014.
2	Haley Bear	IBM Business analytics and cloud computing	Que Publishing	2009
3	Thomas Erl, Zaigham Mahmood and Ricardo Puttini	Cloud Computing, Concepts, Technology, Architecture	Prentice hall	2013
4	Dan C. Marinesco	Cloud Computing - Theory and Practice	Elsevier	2013
5	Barrie Sosinsky	Cloud Computing Bible	Wiley Publishers	2011
6	GautamShroff	Enterprise Cloud Computing	CambridgeUniversity press	2010
7.	Rajkumar Buyya, James Broberg, Andrzej Goscinski. p	Cloud Computing: Principles and Paradigms	Wiley-Blackwell	2011
8	K. Chandrasekaran	Essentials of Cloud Computing	Chapman and Hall/CRC;	2014

## **WEB RESOURCES**

1. <http://www.geektonight.com/cloud-computing-notes/>
2. [https://www.researchgate.net/publication/255994786\\_CLOUD\\_COMPUTING\\_BASICS](https://www.researchgate.net/publication/255994786_CLOUD_COMPUTING_BASICS)

## **TEACHING METHODOLOGY**

1. Power point presentation
2. Seminar by students
3. Assignment to students
4. Lecture through video.
5. Discussion and interaction in class room

## **SYLLABUS DESIGNER**

1. Mrs. G.SANGEETHALAKSHMI , Assistant Professor and Head, Department of Computer Application
2. Mrs. S. KALAISELVI, Assistant Professor, Department of Computer Application

## **PRACTICAL: CLOUD COMPUTING**

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Core Pratical-8	3	45	0	0	3	45	3

### **COURSE OBJECTIVE**

- To develop web applications in cloud
- To learn the design and development process involved in creating a cloud based application
- To learn to implement and use parallel programming using Hadoop

### **SYLLABUS**

1. Install Virtual box/Mware Workstation with different flavours of Linux or windows OS on top of windows7 or 8.
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
3. Install Google App Engine. Create hello world app and other simple web applications using python/java.
4. Find a procedure to transfer the files from one virtual machine to another virtual machine.
5. Install Hadoop single node cluster and run simple applications like wordcount.

**Distribution of Marks: Program Output with Viva voce: 85% and Record: 15%**

### **SYLLABUS DESIGNER**

1. Mrs. G.SANGEETHALAKSHMI , Assistant Professor and Head, Department of Computer Application
2. Mrs. S. KALAISELVI, Assistant Professor, Department of Computer Application

# 1. SOFTWARE ENGINEERING

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Elective -III	5	75	5	75	0	0	3

## COURSE OBJECTIVE

- To know more about the systematic concept for designing, developing, implementing and maintaining the software products in IT Industry.
- This course helps to understand the concept software and what are the various steps involved to deploy the software under engineering concept.

## COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Acquire strong fundamental knowledge in science, mathematics, fundamentals of computer science, software engineering and multidisciplinary engineering to begin in practice as a software engineer.	K1
CO2	Building the analysis model and acquiring the modeling concepts.	K2
CO3	Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.	K3
CO4	Applying testing methods and acquiring the testing strategies	K3
CO5	Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.	K3

*K1-Remember; K2 –Understand; K3-Apply; K4-Analyz*

## MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	S	S	S	S	S
CO2	S	S	M	M	S	S
CO3	S	S	M	M	S	S
CO4	M	S	S	S	S	S
CO5	M	S	S	M	S	S

*S- Strong; M- Medium; L- Low*

# SYLLABUS

## UNIT-I: INTRODUCTION OF SOFTWARE ENGINEERING

15 Hrs

**Introduction:** - Evolving Role of Software - Changing Nature of Software – Software Myths; A Generic View of Process: Layered Technology - Process Models: Waterfall Model - Evolutionary Process Models.

## UNIT-II: REQUIREMENT ENGINEERING

15 Hrs

**Requirements Engineering:** Tasks - Initiating the Requirements Engineering Process - Eliciting Requirements - Building the Analysis Model - Requirements Analysis - Data Modelling Concepts.

## UNIT-III: DATA ENGINEERING

15 Hrs

**Data Engineering:** Design Process and Design Quality - Design Concepts - The Design Model Creating an Architectural Design: Software Architecture - Data Design - Architectural Design - Mapping Data Flow into Software Architecture; Performing User Interface Design: Golden Rules.

## UNIT-IV: TESTING STRATEGIES

16 Hrs

**Testing Strategies:** Strategic Approach to Software Testing- Test Strategies for Conventional and Object Oriented Software - Validation Testing - System Testing -Art of Debugging. Testing Tactics: Fundamentals - White Box- Basis Path - Control Structure - Black Box Testing Methods

## UNIT-V: PROJECT MANAGEMENT

14 Hrs

**Project Management:** Management Spectrum - People - Product - Process - Project. Estimation: Project Planning Process - Resources - Software Project Estimation - Project Scheduling - Quality Concepts - Software Quality Assurance - Formal Technical Reviews.

**Distribution of Marks: Theory 85% and Applications**

**15% TEXT BOOKS**

S. No	Authors	Title	Publishers	Year of publication
1	Roger S Pressman	Software Engineering	A Practitioner's Approach", Sixth Edition, McGraw Hill International Edition, New York	2005
2.	Richard Fairly.	Software Engineering concepts	Tata McGraw-Hill edition.	1998



## REFERENCE BOOK

S. No	Authors	Title	Publishers	Year of publication
1.	Ian Somerville	Software Engineering, 10th Edition	Pearson Education	2018
2.	Mall Rajib	Software Engineering, 2/E	PHI	2006
3.	Rajesh Narang	Software Engineering- Principles and Practices	Tata McGraw-Hill edition.	2015
4.	Rod Stephens	Beginning Software Engineering	Wiley Publications	2012
5.	Ronald J. Leach	Introduction to Software Engineering	CRC press	2016
6	Ian Sommerville,	<b>Software Engineering</b>	<b>PEARSON INDIA</b>	2015
7	Ronald J Leach	Introduction to software engineering	Chapman & Hall/CRC Innovations in software	2000
8	Rajib Mall	Fundamentals of Software Engineering	Prentice Hall India Learning Private Limited; .	2014

## WEB SOURCES

1. <http://fullstackengine.net/software-engineering/>
2. <http://freetechbooks.com/software-engineering/>

## TEACHING METHODOLOGY

- Class room teaching
- Assignments
- Discussions
- Home test
- PPT Presentations
- Simulator & Case Tool

## SYLLABUS DESIGNER

1. Mrs. G.SANGEETHALAKSHMI , Assistant Professor and Head, Department of Computer Application
2. Mrs. N.AMBIGA, Assistant Professor, Department of Computer Application

## 2.E-COMMERCE

Sem Ester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Elective III	5	75	5	75	0	0	3

### COURSE OBJECTIVE

- To provide the students with conceptual knowledge about E-Commerce, E-Business, E-marketing and its legal framework.

### COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Demonstrate an understanding of E-commerce Framework	K1
CO2	Describe the infrastructure for E-commerce	K2
CO3	Discuss Network security and firewalls	K3
CO4	Assess Electronic payment	K2
CO5	Describe the key features of Intraorganizational Electronic Commerce and explain how they relate to each other EDI implementation.	K3

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	S	M	S	S
CO2	S	S	S	M	S	M
CO3	S	S	M	M	S	M
CO4	S	S	S	S	S	M
CO5	S	S	S	M	S	M

*S- Strong*

*M- Medium*

*L- Low*

# SYLLABUS

## UNIT-I: INTRODUCTION TO E-COMMERCE

16 Hrs

Electronic Commerce Framework, Traditional vs. Electronic business applications, the anatomy of E-commerce applications.

## UNIT-II : NETWORKS AND ITS APPLICATIONS

16 Hrs

Network infrastructure for E-Commerce - components of the I-way - Global information distribution networks - public policy issues shaping the I-way. The internet as a network infrastructure. The Business of the internet commercialization.

## UNIT-III : NETWORK SECURITY

12 Hrs

Network security and firewalls - client server network security - firewalls and network security - data and message security - encrypted documents and electronic mail.

## UNIT-IV: WWW AND EDI

15 Hrs

Electronic Commerce and world wide web, consumer oriented E-commerce, Electronic payment systems, Electronic data interchange (EDI),EDI applications in business ,EDI and E-commerce EDI implementation.

## UNIT-V: DIGITAL LIBRARY

16 Hrs

Intra organizational Electronic Commerce

**Distribution of Marks: Theory : 70% and Problems: 30%**

### TEXT BOOKS

S. No	Authors	Title	Publishers	Year of Publication
1	R. Kalakota and A. B. Whinston	Frontiers of Electronic Commerce	Addison Wesley	2008

## REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of publication
1	PeteLoshin, & Paul A. Murphy	Electronic Commerce	Jaico Publishing House	2009
2	P. J. Louis	M-Commerce Course	McGraw-Hill Companies	2008
3	Kenneth C. Laudon	E-Commerce: Business, Technology, Society 4 edition	Pearson	2016
4	E.Brian Mennecke, J.Troy Strader	Mobile Commerce: Technology, Theory and Applications	Idea Group Inc., IRM press	2013
5	Ravi Kalakota & Andrew B.Whinston	Frontiers of Electronic – Commerce	Wesley	2005
6	Kapil Raina, Anurag Harsh	M-Commerce security: A Beginner's Guide	Tata McGraw - Hill Publishing Company Limited, New Delhi	2005
7	David Kosiur,	Understanding Electronic Commerce	Microsoft Press	2005
8	Soka	From EDI to Electronic Commerce	McGraw Hill	2004

## WEB RESOURCES

1. <https://www.studocu.com/en/document/university-of-rajasthan/e-commerce/lecture-notes/e-commerce-notes-pdf-lecture-notes-university-level/1911743/view>
2. [https://www.cdu.edu.au/centres/aflf/pdf/Ecommerce\\_for\\_beginners.PDF](https://www.cdu.edu.au/centres/aflf/pdf/Ecommerce_for_beginners.PDF)
3. <https://www.bestcourse4u.com/what-is-e-commerce/e-commerce-pdf%E2%80%8F/amp/>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars
- Demo using systems
- Chart/Assignment
- Simulation Model
- Smart Class room

## SYLLABUS DESIGNER

- 1.Mrs. G. SANGEETHALAKSHMI, Head & Assistant Prof, Dept of Computer Applications.
- 2.Mrs. R. LAKSHMI, Assistant Prof, Dept of Computer Applications.
- 3.Mrs. B. ARULMOZHI, Assistant Professor And Head, Computer Science

## 1.DESIGN AND ANALYSIS OF ALGORITHM

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Elective – IV	5	75	5	75	0	0	3

### COURSE OBJECTIVE

- To learn and design the software using the concept of various algorithms using its characteristic and performance in Applications to be developed
- To build a solid foundation of the most important fundamental subject in computer science.
- Creative thinking is essential to algorithm design and mathematical acumen and programming skills.

### COURSE OUTCOME

On Successful Completion of this course, students will enable

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Explain about basic details of Algorithm.	K1
CO2	Describe about Divide and conquer paradigm concept with sorting techniques	K2
CO3	Synthesize new graph algorithms and algorithms that employ graph computations as key components, and analyze them.	K4
CO4	Implementing Backtracking paradigms in graph traversal.	K3
CO5	Design data structures techniques using bounding techniques.	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	L	M	L	S	M
CO2	M	M	M	M	L	M
CO3	S	M	S	M	S	L
CO4	M	S	L	M	L	M
CO5	M	S	S	M	L	M

*S-Strong M-Medium L-Low*

# SYLLABUS

## UNIT I – ANALYSIS OF ALGORITHM

15 Hrs

Algorithm-Characteristics - Performance Analysis-Space & Time complexity - Asymptotic notations ( $\Omega$ ,  $\theta$ ,  $O$ )

## UNIT II – DIVIDE & CONQUER

16 Hrs

Divide & conquer - General method - Finding Maximum & Minimum - Merge Sort - Quick Sort - Greedy method - Knapsack problem - Job sequencing.

## UNIT III – GRAPH & DYNAMIC PROGRAMMING

15 Hrs

Dynamic programming - General method - Multi stage graph - Multi string editing - Traveling salesman problem.

## UNIT IV – BACKTRACKING

14 Hrs

Backtracking - General method - 8 Queen problem - Sum of subsets - Graph coloring

## UNIT V – BRANCH & BOUND

15 Hrs

Branch & Bound - Least cost search - Bounding problem - FIFO brand and bounding

Distribution of Marks: **Theory: 75% Algorithms: 25 %**

## TEXT BOOKS

S.No	Authors	Title	Publishers	Year of publication
1	Ellis Horowitz, artajSahni, SanguthevarRajasekaran	Fundamentals of Computer Algorithms	Galgotia Publications	2005

## REFERENCE BOOK

S.No	Authors	Title	Publishers	Year of publication
1	Coremen T.H.,Leiserson C.E. and Rivest R.L	Introduction to Algorithms	PHI Education	1998
2	AnanyLevitin,	Introduction to the Design and Analysis of Algorithms	Pearson Education	2006
3	A.V.Aho, J.E Hopcrof and J.D.Ullman,	The Design and Analysis of Computer algorithms	Pearson Education	2006
4	R. Panneerselvam	Design and Analysis of Algorithms	PHI Learning Pvt Ltd	2016
5	Jon Kleinberg,Eva Tardos	Algorithm Design	Pearson Education	2006
6	Thomas H.Cormen, Carles E.Leiserson, Ronald L.Rivest	Introduction to algorithms	Prentice Hall	1990
7	Amit Kumar and Sandeep Sen	Design and Analysis of Algorithms: A Contemporary Perspective	Cambridge University Press, 2019	2019
8	Michael T. Goodrich	Algorithm Design: Foundation, Analysis And Internet example	Wiley India Pvt. Limite	2006

## WEB RESOURCES

1. <http://www.tutorialspoint.com/hibernate/>
2. <https://javaee.github.io/tutorial/overview001.html>

## TEACHING METHODOLOGY

- Class room teaching.
- Discussions.
- Assignments.
- Demo using systems.
- Presentation using ppt.

## SYLLABUS DESIGNER

- 1.Mrs. G. SANGEETHALAKSHMI, Head & Assistant Prof, Dept of Computer Applications.
- 2.Mrs. R. LAKSHMI, Assistant Prof, Dept of Computer Applications.

## DATA ANALYTICS

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		Elective –IV	5	75	5	75	0	0	3

### COURSE OBJECTIVE

➤ This paper provides an exposure to Big data, to learn the different ways of Data Analysis, to be familiar with data streams, to learn the mining and clustering and able to be familiar with the visualization concept.

### COURSE OUTCOME

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1 – K4)
CO1	Learn the concept behind Big Data and apply the statistical analysis methods.	K1, K2 & K3
CO2	Learn and Apply different Data Analysis Techniques	K1, K2 & K3
CO3	Learn Data Streams	K1, K2
CO4	Learn and Apply the Mining and Clustering Techniques	K1, K2 & K3
CO5	Learn and apply the different data Visualization Concepts	K2&k3

*Knowledge Level – K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	S	M	S	S
CO2	S	S	S	M	S	M
CO3	S	S	M	M	S	M
CO4	S	S	S	S	S	M
CO5	S	S	S	M	S	M

*S – Strong*

*M – Medium*

*L – Low*



# SYLLABUS

## UNIT I – INTRODUCTION TO BIG DATA

14 HRS

Introduction to Big Data Platform – Challenges of conventional systems - Web data – Evolution of Analytic scalability, analytic processes and tools, Analysis VS Reporting - Modern data analytic tools, Statistical concepts: Sampling distributions, re-sampling, statistical inference, prediction error.

## UNIT II – DATA ANALYSIS

16 Hrs

Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesian networks, Support vector and kernel methods, Analysis of time series: linear systems analysis, nonlinear dynamics - Rule induction - Neural networks: learning and generalization, competitive learning, principal component analysis and neural networks.

## UNIT III – MINING DATA STREAMS

14 Hrs

Introduction to Streams Concepts – Stream data model and architecture - Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream –Estimating moments – Counting oneness in a window – Decaying window – Real Time Analytics Platform(RTAP) applications.

## UNIT IV – FREQUENT ITEMSETS AND CLUSTERING

16 Hrs

Mining Frequent Itemsets - Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent Itemsets in a stream – Clustering Techniques – Hierarchical – K- Means – Clustering high dimensional data – CLIQUE and PROCLUS – Frequent pattern based clustering methods – Clustering in non-Euclidean space – Clustering for streams and Parallelism.

## UNIT V – FRAMEWORKS AND VISUALIZATION

15 Hrs

MapReduce – Hadoop, Hive, Map R – Sharding – NoSQL Databases - S3 - Hadoop Distributed file systems – Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications

**Distribution of Marks: Theory: 80% and Application: 20%**

### TEXT BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Michael Berthold, David J. Hand	Intelligent Data Analysis	Springer	2007
2	Anand Rajaraman, Jeffrey David Ullman	Mining of Massive Datasets	Cambridge University Press	2012

## REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Bill Franks	Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with advanced analytics	John Wiley & sons	2012
2.	Glenn J. Myatt	Making Sense of Data	John Wiley & Sons	2007
3.	Pete Warden	Big Data Glossary	O'Reilly	2011
4.	Jiawei Han, Micheline Kamber	Data Mining Concepts and Techniques	Elsevier	Reprinted 2008
5.	Viktor Mayer Schonberger, Kenneth Cukier	Big Data: A Revolution That Will Transform How We Live, Work and Think	John Murray Publishers	2013
6	Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani	An Introduction to Statistical Learning with Applications in R	Springer	2013
7	EMC Education Service	Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data	EMC Education Service - Wiley	2015
8	Daniel Covington	Analytics: Data Science, Data Analysis and Predictive Analytics for Business	Audible	5 <sup>th</sup> Edition

## WEB RESOURCES

1. <https://data-flair.training/blogs/big-data-tutorials-home/>

## TEACHING METHODOLOGY

- Class room teaching.
- Group discussions
- Seminars and Smart Class room
- Demo using systems
- Chart/Assignment
- Simulation Model

## SYLLABUS DESIGNERS

1. Mrs.B.ARULMOZHI , Assistant Professor and Head,Dept of Computer Science
2. Mrs.S.SHANTHI., Assistant Professor, Dept of Computer science

## MULTIMEDIA

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
VI		SB Practical-4	2	30	0	0	2	30	2

### COURSE OBJECTIVE

- To motivate the students to develop the project using Multimedia concept.
- This course makes the students to obtain the knowledge about the flash environment which helps them to develop the projects.
- On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To understand the basis of Flash Multimedia Concept.	K1
CO2	To learn about life Cycle of Android	K2
CO3	To implement colors and fonts in Flash	K3
CO4	Uses of frames and animations	K3
CO5	To learn about UI components	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	M	S	S
CO2	M	S	M	S	S	M
CO3	S	S	S	L	M	S
CO4	S	M	S	M	S	L
CO5	S	M	S	M	S	M

*S-Strong, M-Medium, L-Low*

## SYLLABUS

### UNIT I – FLASH INTRODUCTION

6 Hrs

Introducing Flash – Basics – Creating Objects – Editing Objects.

### UNIT II – WORKING WITH COLORS AND FONT

6 Hrs

Color and Text – Symbols and Instances – Library – Bitmaps, Sound, Video.

### UNIT III – WORKING WITH FRAMES AND LAYERS

6 Hrs

Frames and Layers – Animation Basics – Understanding animation – Scenes – Frame –by-Frame Animation – Onion Skinning.

### UNIT IV – WORKING WITH ANIMATIONS

6 Hrs

Text Animation – Motion Tweening – Shape tweening – Motion guide – Movie clips.

### UNIT V – WORKING WITH MOVIES

6 Hrs

Making Buttons – Creating an animated button – Creating Linear Movies

## PRACTICALS

1. Creating And Editing Objects
2. Text Manipulation
3. Frame By Frame Animation
4. Motion Tweening
5. Shape Tweening
6. Animating Text
7. Movie Clips
8. Creating Buttons

**Distribution of Marks: Program Output with Viva voce: 85% and Record: 15%**

### TEXT BOOK

S.No	Authors	Title	Publishers	Year of Publication
1	Nick Van Dome	Flash MX: In easy steps	Dreamtech Publications	2010

## REFERENCE BOOK

S.No	Authors	Title	Publishers	Year of Publication
1	Brian Underdahl	Macromedia Flash MX 2004: The Complete Reference	McGraw Hill Professional	2004
2	Robert Reinhardt	Macromedia Flash MX 2004 Bible	Wiley Publishing, Inc.	2004
3	Birgitta Hosea	Focal Easy Guide to Macromedia Flash 8: For New Users and Professionals	Focal Press;	2006
4	<a href="#">P. S. Woods</a>	Macromedia Flash MX Developer's Guide	Tata Mcgraw Hill	2002
5	Gary Rosenzweig	Macromedia Flash 5 Actionscript for Fun and Games	QUE; Pap/Cdr edition	2001
6	Borko Furht	Handbook of Multimedia Computing	CRC Press	1999
7	Fred Halsall	Multimedia Communications: Applications, Networks, Protocols and Standards	Pearson Education	2001
8	<a href="#">SugataMitra</a>	Introduction to Multimedia Systems	Academic Press, Inc.	2001

## WEB RESOURCES

1. <https://www.tutorialspoint.com/multimedia/index.htm>
2. [https://www.wired.com/2010/02/flash tutorial for beginners - lesson 1/](https://www.wired.com/2010/02/flash_tutorial_for_beginners_-_lesson_1/)

## TEACHING METHODOLOGY

- Class room teaching.
- Discussions.
- Assignments.
- Demo using systems.
- Presentation using ppt.

## SYLLABUS DESIGNER

1. Mrs. G.SANGEETHALAKSHMI, Assistant Professor and Head, Computer Application
2. Mrs. BHUVANESWARI R, Assistant Professor, Department of Computer Application