

E.M.G. YADAVA WOMEN'S COLLEGE, MADURAI – 625 014.

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

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

DEPARTMENT OF COMPUTER SCIENCE



CBCS SYLLABUS

BACHELOR OF SCIENCE

PROGRAMME CODE - S

COURSE STRUCTURE

(w.e.f. 2017 – 2018 onwards)



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CRITERION - I

1.1.3 Details of courses offered by the institution that focus on employability / entrepreneurship / skill development during the year.

Syllabus copies with highlights of contents focusing on
Employability / Entrepreneurship / Skill Development



To be Noted:

HIGHLIGHTED COLORS	COURSES
	Employability
	Skill Development
	Entrepreneurship
	Skilled & Employability

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(Re-accredited (3rd Cycle) with Grade A⁺ & CGPA 3.51 by NAAC)**CBCS****DEPARTMENT OF COMPUTER SCIENCE-UG****COURSE STRUCTURE - SEMESTER WISE**

(w.e.f. 2017 – 2018 Batch onwards)

Sem	Part	Sub. Code	Title of the paper	Teaching hrs(per week)	Duration of Exam (hrs)	Marks allotted			Credits
						C.A	S.E	Total	
1	I	17IT1	Part I - Tamil	6	3	25	75	100	3
	II	172E1	Part II - English	6	3	25	75	100	3
	III	17S11	Core - Programming in C	4	3	25	75	100	4
	III	17S1P	Core - Programming in C Lab	5	3	40	60	100	3
	III	17AMS1	Allied – Discrete Mathematics	5	3	25	75	100	5
	IV	17SES1P	Skill Based – Office Automation Lab	2	2	40	60	100	2
	IV	17NMS1	NME - Computer Fundamentals	2	2	25	75	100	2
2	I	17IT2	Part I - Tamil	6	3	25	75	100	3
	II	172E2	Part II - English	6	3	25	75	100	3
	III	17S21	Core – Object Oriented Programming with C++	4	3	25	75	100	4
	III	17S2P	Core - Object Oriented Programming with C++ Lab	5	3	40	60	100	3
	III	17AMS2	Allied – Resource Management and Techniques	5	3	25	75	100	5
	IV	17SES2P	Skill Based – Linux Lab	2	2	40	60	100	2
	IV	17NMS2	NME - Internet Applications	2	2	25	75	100	2
3	I	17IT3	Part I - Tamil	6	3	25	75	100	3
	II	172E3	Part II - English	6	3	25	75	100	3
	III	17S31	Core – Digital Principles and Computer Organization	4	3	25	75	100	3
	III	17S32	Core – JAVA Programming	4	3	25	75	100	4
	III	17S3P	Core – JAVA Programming Lab	3	3	40	60	100	3
	III	17AMS3	Allied – Graph Theory	5	3	25	75	100	5
	IV	17SES3P	Skill Based – Multimedia Lab	2	2	-	-	100	2
4	I	17IT4	Part I - Tamil	6	3	25	75	100	3
	II	172E4	Part II - English	6	3	25	75	100	3
	III	17S41	Core – DOT NET	4	3	25	75	100	3
	III	17S42	Core - Data Structure and Algorithms	4	3	25	75	100	4
	III	17S4P	Core - Data Structure and Algorithms Lab	3	3	40	60	100	3
	III	17AMS4	Allied - Numerical Methods	5	3	25	75	100	5
	IV	17SES4P	Skill Based – DOT NET Lab	2	2	-	-	100	2

5	III	17S51	Core – Operating Systems	5	3	25	75	100	4
	III	17S52	Core – Software Engineering	5	3	25	75	100	4
	III	17S53	Core - RDBMS	5	3	25	75	100	4
	III	17S5P	Core – RDBMS Lab	6	3	40	60	100	3
	III		Elective I	5	3	25	75	100	5
	IV	17SES5P	Skill Based - Python Lab	2	2	-	-	100	2
	IV	174EV5	Environmental Studies	2	2	-	-	100	2
6	III	17S61	Core – Data Communication and Networking	5	3	25	75	100	4
	III	17S62	Core - Web Programming	5	3	25	75	100	4
	III	17S6P	Core - Web Programming Lab	6	3	40	60	100	3
	III		Elective II	5	3	25	75	100	5
	III	17SPR6	Elective III (Project)	5	3	20	80	100	5
	IV	17SES6P	Skill Based - PHP Lab	2	2	-	-	100	2
	IV	174VE6	Value Education	2	2	-	-	100	2
	PART V	175NS4 / 175PE4	Extension Activities N.S.S / Phy. Education	-	2	-	-	-	1
			Total	180				140	

Elective I

Semester - V (Choose any one)

1. Computer Graphics - (17SE5A)
2. Cloud Computing - (17SE5B)

Elective II

Semester - VI (Choose any one)

1. Data Mining - (17SE6A)
2. Mobile Computing - (17SE6B)

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(w.e.f. 2017 – 2018 onwards)

Title of the Paper	: Core - Programming in C	
Semester	: I	Contact Hours: 4
Sub Code	:17S11	Credits 4

Objective :

Make the students to understand programming language concepts. The main emphasis of the subject is to write 'C' program in an efficient manner by analyzing different kinds of mathematical and scientific problems.

Unit – I

Overview of C: History of C – Importance of C. **Constants, Variables and Data**

Types: Introduction – Character Set – C Tokens – Keywords and Identifiers – Constants – Variables – Data Types - Declaration of Variables – Declaration of Storage Class – Assigning Values to Variables - Defining Symbolic Constants – Declaring a Variable as Constant -Declaring a Variable as Volatile – Overflow and Underflow of Data.

Operators and Expressions: Introduction – Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators – Increment and Decrement Operators - Conditional Operators - Bitwise Operators - Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Some Computational Problems – Type Conversions in Expressions- Operator Precedence and Associativity – Mathematical Functions.

Unit – II

Managing Input and Output Operations: Introduction - Reading a Character - Writing a Character – Formatted Input - Formatted Output. **Decision Making and**

Branching: Introduction – Decision Making with If Statement – Simple If Statement – The If... Else statement – Nesting of If Else Statements – The Else If Ladder – The Switch Statement – The ?: Operator – The Goto Statement. **Decision Making and**

Looping: Introduction - The while Statement – The do Statement – The for Statement – Jumps in Loops – Concise Test Expressions.

Unit-III

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

Unit-IV

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

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

Unit – V

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

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

Text Book :

Balagurusamy. E, *Programming in ANSI C*, TMH Publications, 6th Edition, 2012.

Chapters :

Unit – I : 1.1, 1.2, 2, 3

Unit – II : 4, 5, 6

Unit – III : 7, 8

Unit – IV : 9, 10

Unit – V : 11, 12

Reference Books :

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

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Title of the Paper	: Core - Programming in C Lab	
Semester	: I	Contact Hours: 5
Sub Code	: 17S1P	Credits 3

List of Programs:

1. Sine Series
2. Sum of Digits
3. Fibonacci Number
4. Prime Number
5. Pay Bill
6. EB Bill
7. Character day of week – Switch
8. Quadratic equation – Switch
9. Sort an Array
10. Search an Element
11. Adam Number
12. Alphabetical Order
13. Arithmetic Operations - Matrix
14. Transpose of a matrix
15. Frequency of a number – Function
16. NCR Value – Function
17. Factorial Value – Recursion
18. Student Mark Statement - Structure
19. String Manipulations-Pointers
20. Read and Write Data – File

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Skill Based Elective – I

Title of the Paper	: Office Automation Lab	
Semester	: I	Contact Hours : 2
Sub Code	: 17SES1P	Credits : 2

List of Programs:**MS-WORD:**

1. Simple News Letter
2. Resume
3. Greeting Card
4. Cover Page of a Project Report
5. Macro for Inserting a Picture and Formatting the Text

MS-POWERPOINT:

6. Power Point Presentation from Templates
7. Bar Charts.
8. Create a Power Point Presentation with Shapes.
9. Adding Images.
10. Audio and Video effects.

MS-EXCEL:

11. Worksheet with several Columns and Records and find the Sum of all the Columns.
12. Report containing the pay details of the Employee.
13. Student Result Sheet.
14. Simple Bar Chart o Highlight the Sales of the Company.
15. Pie-Chart for a simple Data and Give Legends.

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Title of the Paper	: Computer Fundamentals	
Semester	: I	Contact Hours : 2
Sub Code	: 17NMS1	Credits 2

Objective:

To introduce the relationship between information and data and the way the computers use binary codes to represent data and instructions.

Unit-I

Understanding Computers: Introduction – Characteristics of Computers – Evolution of Computers – Computers Then and Now – Basic Anatomy of the Computer .

Data Representation: Data Representation within the computer – Number Systems – Character Representation.

Unit-II

The Central Processing Unit: Control unit – Arithmetic Logic unit – Instruction set – Registers – Processor speed.

Unit-III

Memory Organization: Introduction – Storage evaluation criteria – Main Memory – Secondary Storage Devices.

Unit-IV

Input Devices: Introduction – Keyboard Devices – Point and Draw Devices – Scanning Devices – Voice Recognition Devices – Vision Input Devices.

Output Devices: Display Devices – Printers – Plotters – Computer Output Microfilm – Voice Response Systems.

Unit-V

Multimedia: Definition – Multimedia tools – Elements of Multimedia – Applications of Multimedia .

Computer Software: Relationship between Hardware and Software – Computer Languages – High level Languages.

Text Book:

Sanjay Saxena, Prabhpreet Chopra - *IT Tools and Applications* , Vikas Publishing House Pvt Ltd, New Delhi, 1st Edition , 2005.

Chapters:

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

Reference Books:

1. Amitesh Goswami , *Computer Fundamentals and Programming* Wisdom Press, New Delhi, 2nd Edition, 2003.
2. Balagurusamy, *Fundamentals of Computer*, Tata Mc- Graw Hill Publications, New Delhi, 1st Edition, 2009.
3. Pradeep K. Sinha, Priti Sinha, *Computer Fundamentals*, BPB Publications, New Delhi. 3rd Edition, 2003.
4. Raja Raman V, *Fundamentals of Computer*, Prentice Hall Of India, New Delhi, 3rd Edition, 1985.
5. Ram B, *Computer Fundamentals*, New Age International Publishers, Patna, 3rd Edition, 2012.

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Title of the Paper	: Core - Object Oriented Programming with C++		
Semester	: II	Contact Hours	: 4
Sub Code	: 17S21	Credits	4

Objective:

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

Unit- I

Principles of Object-Oriented Programming : Basic concepts of Object Oriented Programming - Benefits of OOP – Object Oriented Languages – Application of OOP. **Beginning with C++:** What is C ++? – Application of C++ – A Simple C++ Program – More C++ Statements – An Example With Class – Structure of C++ Program – Creating the Source file – Compiling and Linking. **Tokens , Expressions and Control Structures** : Introduction - Tokens – Keywords – Identifiers and Constants – Basic Data Types – User –Defined Data Types – Storage Classes - Derived Data Types – Symbolic Constants – Type Compatibility – Declaration of Variables – Dynamic Initialization of Variables – Reference Variables – Operators in C++ - Scope Resolution Operator – Member Dereferencing Operators – Memory Management Operators – Manipulators – Type Cast Operator – Expressions and Their Types – Special Assignment Expressions – Implicit Conversions – Operator Overloading – Operator Precedence – Control Structures.

Unit- II

Functions in C++ : Introduction - The Main Function – Function Prototyping – Call by Reference – Return by Reference – Inline Functions – Default Arguments – Const Arguments – Recursion - Function Overloading – Friend and Virtual Functions – Math Library Functions. **Classes and Objects** : Introduction – C Structures Revisited–

Specifying a Class – Defining Member Functions – A C++ Program with Class – Making an Outside Function Inline – Nesting of Member Functions – Private Member Functions – Arrays within a Class – Memory Allocation for Objects – Static Data Members – Static Member Functions - Arrays of Objects – Objects as Function Arguments – Friendly Functions – Returning Objects – const Member Functions- Pointers to Members – Local Classes.

Unit- III

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

Unit- IV

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

Unit- V

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

Operations – Updating a File : Random Access – Error Handling during File Operations -
Command-line Arguments.

Text Book:

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

Chapters :

Unit – I : 1.5-1.8, 2, 3

Unit – II : 4, 5

Unit – III : 6, 7.1 – 7.6,7.8

Unit – IV : 8.1 – 8.10, 9

Unit – V : 10, 11

Reference Books:

1. Herbert Schildt, *C++:The complete Reference* , TMH Publications,New Delhi, 4th Edition,2003.
2. Mike McGrath, *C++ Programming in easy steps*,Dreamtech Press, New Delhi,3rd Edition,2011.
3. RadhaGanesan.P , *Programming with C++*,Scitech Publications, 1st Edition,2002
4. Ravichandran.D, *Programming with C++* , TMH Publications,New Delhi, 2nd Edition,2002..
5. Robert Laffore, *Object Oriented Programming using C++*, Sams Publishing , 4th Edition, 2002.

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Title of the Paper	: Core – Object Oriented Programming with C++ Lab	
Semester	: II	Contact Hours: 5
Sub Code	: 17S2P	Credits 3

List of Programs:

- 1) Perfect or Not
- 2) Default Arguments
- 3) Inline Function
- 4) Friend Function
- 5) Constructor
- 6) Copy Constructor
- 7) Destructor
- 8) Operator Overloading
- 9) Function Overloading
- 10) Recursive Function
- 11) Function Templates
- 12) Single Inheritance
- 13) Multiple Inheritance
- 14) Multilevel Inheritance
- 15) Heirarchial Inheritance
- 16) Hybrid Inheritance
- 17) Virtual Function
- 18) String Manipulations
- 19) Exception Handling
- 20) Files

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Skill Based Elective-II

Title of the Paper	: Linux Lab	
Semester	: II	Contact Hours : 2
Sub Code	: 17SES2P	Credits 2

List of Programs:

1. To set the attributes of a given file.
2. To calculate HRA of employees depending on their basic.
3. To find the number of terminals using logged-in.
4. Find the number of users using logged –in
5. File manipulation operation.
6. To reverse a string accepted in the command line.
7. To check if the user's name is pressed in pwd file.
8. Create and append a file.
9. To illustrate the usage of default argument in a shell script.
10. To check for the existence of the file and check if it is executable.
11. Delete the lines from a file which have a specific word.
12. Using awk command communication command.
13. Shell programming using filters:grep,sed.
14. Create a child process: fork, join.
15. To display a limit of value in descending order format.
16. Design a script to create your own command.
17. Job scheduling using@ Command.
18. Customizing log-in process.
19. Signal handling.
20. To illustrate the usage of break statement.

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Title of the Paper	: Internet Applications	
Semester	: II	Contact Hours: 2
Sub Code	: 17NMS2	Credits 2

Objective:

To make the students to understand the concepts and techniques in Internet applications.

Unit-I

Introduction to Internet - Introduction-Some Statistics – What is Internet – How does Internet Work? –What is Special about the Internet? A Brief History of Internet .

Unit-II

Getting Connected: Introduction-Dial – up Connection – Dedicated Lines – ISDN – DSL – Cable Modem – Satellite Internet – Cellular broadband – Wireless Broadband – Choosing the best Internet Connection.

Unit-III

World Wide Web: Introduction-Internet and Web – How the Web Works> - A Brief History of WWW.**Web Browsing:** Web Browsers – Types of Browsers – Web Browsing.

Unit-IV

Internet Addressing: Introduction-IP Address-Domain Names – Domain Name System – Uniform Resource Locator - Electronic Mail Addresses.

Unit-V

E-Mail: Introduction-How E-mail works – Why Use E-mail? – E-Mail – Names and Addresses – Mailing Basics – E-mail Ethics – Spamming – E-mail – Advantages and Disadvantages – E-mail Safety Tips – Smileys – Free E-mail Providers.

Text Book:

Alexis Leon and Mathews Leon, *Internet for Everyone*, Vikas Publishing House PVT LTD, Chennai, 1st Edition, 2012.

Chapters:

Unit – I	1
Unit – II	3
Unit – III	: 4, 5
Unit – IV	8
Unit – V	10

Reference Books:

1. Akilandeswari J ,Gopalan N P, *Web Technology*, Pearson Hall of India, New Delhi, 2nd Edition, 2008.
2. Douglas E.Comer,*The Internet* ,addisionwesleylongman Private limited, New Delhi, 3rd Edition, 2001.
3. Glee Harrah Cady Pat McGregor,Mastering, *The Internet*, BPB Publications New Delhi, 1stEdition , 1996.
4. Harley Hahn, *The Internet Complete Reference*, Tata MC-Graw Hill, New Delhi, 2nd Edition , 2008.
5. Raj Kamal, *Internet and Web Technology*, Tata McGraw- Hill, New Delhi, 7th Edition, 2008.

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Title of the Paper	: Core – Digital Principles and Computer Organization	
Semester	: III	Contact Hours: 4
Sub Code	: 17S31	Credits 3

Objectives:

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

Unit – I

Digital Logic: The Basic Gates - NOT, OR, AND - Universal Logic Gates - NOR, NAND - **Combinational logic Circuits:** Boolean Laws and Theorem - Sum – of - Product Method - Truth Table to Karnaugh Map – Pairs, Quads and Octets – Karnaugh Simplifications – Don't - care conditions – Product – of - Sums Method – Product – of - Sum Simplification - **Data Processing Circuits:** Multiplexers – DeMultiplexers.

Unit – II

Number Systems and Codes: Binary Number System–Binary – to - decimal Conversion– Decimal – to - binary Conversion – Octal Numbers - Hexadecimal Numbers – The ASCII code – The Excess 3 code – The Gray Code. **Arithmetic Circuits:** Binary Addition – Binary Subtraction – 2's Complement Representation – 2's Complement Arithmetic. **Flip-Flops:** RS Flip – Flops – Edge - triggered RS Flip – Flops – Edge-triggered D Flip-Flops – Edge-triggered JK Flip-Flops – JK Master Slave Flip-Flops.

Unit - III

Basic Computer Organization and Design: Instruction Codes – Computer Registers – Computer Instructions – Timing and Control – Instruction Cycle – Assembly Language – The Assembler.

Unit –IV

Central Processing Unit : Introduction – General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation –

Reduced Instruction Set Computer(RISC) – **Pipeline and Vector Processing:** Pipelining - Instruction Pipelining.

Unit - V

Input - Output Organization: Peripheral Device – Input - Output Interface – Asynchronous Data Transfer – Modes of Transfer – Priority Interrupt – Direct Memory Access – **Memory Organization:** Memory Hierarchy - Main Memory – Auxillary Memory – Associative Memory – Cache Memory – Virtual Memory.

Text Books:

1. Donald P Leach, Albert Paul Malvino, Goutam Saha, *Digital Principles and Applications*, Mc Graw Hill Publications, 8th Edition, 2015.

Chapters:

Unit – I : 2.1, 2.2, 3.1, 3.8, 4.1, 4.2.

Unit – II : 5.1, 5.3, 5.5, 5.10, 6.1, 6.2, 6.5, 6.6, 8.1, 8.5, 8.8

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

Chapters :

Unit – III : 5.1, 5.5, 6.3, 6.4, 6.7

Unit – IV : 8.1, 8.6, 8.8, 9.2, 9.4

Unit – V : 11.1, 11.6, 12.1, 12.6

Reference Books :

- 1) Floyd, Jain, *Digital Fundamentals*, Pearson Education, New Delhi, 8th Edition 2009
- 2) Godse A.P, *Digital Principles and System Design*, Technical Publications Pune, Pune 1st Edition, 2009
- 3) John Hennessy L, *David Patterson A* , Computer Architecture, Morgan Kaufmann Publishers, India, 4th Edition, 2007
- 4) John Hennessy L, *David Patterson A*, Computer Organization and Design, Morgan Kaufmann Publishers, India, 3rd Edition, 2007
- 5) William Stallings, *Computer Organization & Architecture*, Prentice Hall of India New Delhi, 7th Edition, 2008

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Title of the Paper	: Core – JAVA Programming	
Semester	: III	Contact Hours: 4
Sub Code	: 17S32	Credits : 4

Objectives:

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

Unit-I

Java Evolution: Java history- Java Features- How Java Differs from C and C++-Java and Internet- Java and world wide web- Web Browsers- Java Environment.

Over view of Java Language: Introduction- Simple Java Program- Java program Structure- Java Tokens- Implementing a Java program- Java Virtual Machine- Command Line Arguments. **Constants-Variables-andDataTypes:** Introduction-Constants-Variables-Data types- Declaration of variables- Giving Values to Variables- Scope of Variables- Symbolic Constants- Type Casting- Getting Values of Variables- Standard Default Values.

Unit-II

Operators and Expressions: Introduction- Arithmetic Operators- Relational Operators- Logical Operators- Assignment Operators- Increment and Decrement Operators-Conditional Operators-Bitwise Operators-Special operators-Arithmetic Expressions-Evaluation of Expression-Precedence of Arithmetic operators-Type Conversions in Expressions-Operator precedence and Associativity-Mathematical functions. **Decision Making and Branching:** Introduction-Decision Making with If Statement-Simple If Statement-The If...Else Statement-Nesting of If...Else Statements-The Else If Ladder-Switch Statement-The ? : Operator. **Decision Making and Looping:** Introduction-While Statement-do Statement-for Statement-Jumps in Loops-Labeled Loops.

Unit-III

Classes-Objects and Methods: Introduction-Defining a Class-Fields Declaration- Method of Declaration- Creating Objects- Accessing Class Members- Constructors- Method Overloading- Static Members- Nesting of Methods- Inheritance: Extending a Class- Overriding Methods- Final Variables and Methods- Final Classes- Finalizer Methods- Abstract Methods and Classes- Visibility Control. **Arrays-Strings-and Vectors:** Introduction-One-dimensional Arrays-Creating an Array-Two-dimensional Arrays- Strings- Vectors- Wrapper Classes- Enumerated Types. **Interfaces: Multiple inheritance:** Introduction-Defining Interfaces- Extending Interfaces-Implementing Interfaces-Accessing Interface Variables.

Unit-IV

Packages: Putting Classes Together : Introduction-Java API Packages-Using System packages-Naming conventions-Creating Packages-Accessing a package-Using a Package- Adding a Class to a Package-Hiding Classes-Static Import. **Multithreaded Programming:** Introduction-Creating Threads-Extending the thread Class-Stopping and Blocking a Thread-Life Cycle of a Thread-Using Thread Methods-Thread Exceptions-Thread Priority-Synchronization- Implementing the 'Runnable' Interface-Inter-thread Communication.

Unit-V

Managing Errors and Exceptions: Introduction-Types of Errors-Exceptions-Syntax of Exception Handling Code-Multiple catch Statements-Using Finally Statement-Throwing our own Exceptions- Improved Exception Handling in Java SE 7-Using Exceptions for Debugging. **Applet Programming:** Introduction-How Applets Differ from Applications-Preparing to Write Applets-Building Applet Code-Applet Life Cycle-Creating an Executable Applet-Designing a Web page-Applet tag-Adding Applet to HTML File-Running the Applet-More about Applet tag- Passing parameters to Applets-Aligning the Display-More about HTML tag-Displaying Numerical values-Getting Input from the user-Event Handling. **Managing Input/Output Files in Java:** Byte Stream classes-Character Stream Classes- Other Stream classes.

Text Book:

Balagurusamy E - *Programming with Java*- McGraw Hill Education(India) Private Limited- New Delhi- Fifth edition- 2015.

Chapters:

Unit - I : 2.1 to 2.6, 2.9, 3.1,3.2, 3.5, 3.6, 3.9, 3.11,4.1 to 4.11

Unit - II : 5, 6, 7

Unit - III : 8.1 to 8.16, 8.18, 9.1 to 9.8 , 10

Unit - IV : 11, 12

Unit - V : 13, 14, 16.4, 16.5, 16.17

Reference Book:

1. Danny Goodman ,*Java Script Bible*, WILEYdreamtech India Pvt.ltd, India, 4thedition, 2005.
2. Herbert Schildt ,*The Complete Reference Java*, TMH Publication, New Delhi, 5th Edition, 2006.
3. John Gorney W, *Java Script Professional Projects* , Thomson Course Technology, Canada, 2nd edition, 1985.
4. Ken Arnold , *The JavaTM Programming Language*, Pearson Prentice Hall, India, 3rd edition, 1990.
5. Nelson Beebe H F, *The Java Script*, Salt Lake City, USA, version 2.3, 3rd Edition, 1995.

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(w.e.f. 2017 – 2018 Batch onwards)

Title of the Paper	: Core - JAVA Programming Lab	
Semester	: III	Contact Hours : 3
Sub Code	: 17S3P	Credits : 3

List of Programs:

1. Print prime numbers
2. Constructor Overloading
3. Parameterized Constructor
4. Function overloading
5. Function overriding
6. Multi Dimensional Array
7. Sorting number using Array
8. Interface
9. Single Inheritance
10. Multilevel Inheritance
11. Packages
12. Multiplication table using Multithread
13. Appending a Files
14. Exception Handling
15. Marquee of Text
16. Display an Image
17. Draw a face using Applet
18. Animation using Applet
19. Draw a figure using Graphics
20. Display a different Shape

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Title of the Paper	: Multimedia Lab	
Semester	: III	Contact Hours : 2
Sub Code	: 17SES3P	Credits 2

ANIMATIONS USING FLASH & DESIGNS USING PHOTOSHOP

1. Animation to represent the growing moon.
2. Animation to indicate a ball bouncing on steps.
3. Simulate movement of a cloud.
4. Draw the fan blades and to give proper animation.
5. Animate a Circle changing to a Square
6. Text animation using Mask Technique
7. Create a Butterfly and make it to fly
8. Animated cursor using startdrag
9. Animate a Candle light
10. Animate Water bubbles in Water
11. Design a visiting card
12. Pamphlet designing
13. A cover page for the book
14. Adjust the brightness and contrast of the picture
15. Place a picture preferably on a plain background
16. Type a word and apply the effects shadow emboss
17. Merging 3 images into one image
18. Change a picture into black and white
19. Create a Web Banner Design
20. Design a LOGO

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(w.e.f. 2017 – 2018 Batch onwards)

Title of the Paper	: Core - DOT NET	
Semester	: IV	Contact Hours: 4
Sub Code	: 17S41	Credits 3

Objectives:

To develop the programming skills in DOT NET Area.

Unit-I

Introducing.NET -.NET Framework Overview-Common Type System-Common Language Specification-Common Intermediate Language- Just in Time Compiler-Virtual Execution System-.Net Framework Class Library- Namespace- Languages in.NET -Visual Studio.NET- Why VB.NET?-Object-Encapsulation- Overloading Inheritance- Polymorphism- Constructors and Destructors -Interface- Free Threading Delegates- Structured Exception Handling- Extended Markup Language- Web Service- Winforms -Console Applications- Assemblies- ADO.NET- Active Server Pages .NET(ASP.NET). **Arrays** - One-dimensional Array- Array Initialization- Printing array elements by using For Each...Next Loop- Redim Statement- Multi-dimensional array- Initialization of Two dimensional array- Arrays of array- List Box control. **Procedures and Structures** – Subroutine Procedures- Function Procedure- Property Procedure- Function- Value returned by its Function name- The return statement- Calling a functions- Call by reference- Functions with arrays- Functions with Param Arrays- Function overloading-Sub Procedure-Invoking a Sub Procedure- Structure- What is a structure?- Giving Values to structure elements- Function inside the structure- Nested Structures- Message box(MsgBox) function- Input Box Function.

Unit - II

Data Access with ADO.NET - What is Database?- What is a Relational Data base?- Table Creation- Record insertion- Displaying Data- Deleting Data- Modifying Data- Drop Table- Special features of ADO.NET- Difference between ADO and ADO.NET- Connection-

Commands- Data Reader- Data Set- Using a Data Grid- Using Data adapter configuration wizard- XML and ADO.NET- XML Document to ADO.NET Data- Filtering data Using Data View- Complex data binding- Command parameters property- Using stored procedures with a command. **Graphics** - GDI- GDI+ - GDI+ Namespaces- System.Drawing Namespace- Classes- Structures- System.Drawing.Design Namespace- Editor Classes- Toolbox Classes- System.Drawing.Drawing 2D Namespace- Classes-Enumerations- System.Drawing.Imaging Namespace- System.Drawing.Printing Namespace- Classes- System.Drawing.Text Namespace- To Draw a Line- Arc- Ellipse- Displaying Images- The Font Class- Working with Font Family.

Unit-III

Developing ASP.NET Applications: ASP.NET Applications – Code-Behind – The Global.asax Application File – Understanding ASP.NET Classes – ASP.NET Configuration.

Web Form Fundamentals: A Simple Page Applet – Improving currency Converter – A Deeper Look at HTML Control Classes – The Page Class – Assessing HTML Server Controls.

Unit – IV

Web Controls: Stepping Up to Web Controls – Web Control Classes – AutoPostBack and Web Control Events – A Simple Web Page Applet – Assessing Web Controls. **Validation and Rich Controls:** Validation – A Simple Validation Example – Understanding Regular Expressions – A Validated Customer Form – Other Rich Controls.

Unit-V

The DataList, DataGrid and Repeater: Introducing Templates – Using Templates with the DataList – Data Binding with Multiple Templates – Comparing the Template Controls – Preparing Your List for Selection and Editing – Selecting Items – Editing Items – Paging with the DataGrid – Sorting with the DataGrid. **Files, Streams, and Email:** Files and Web Applications – Files System Information – Reading and Writing with Streams- Allowing File Uploads- Sending Mail.

Text Books:

1. Radhaganesan P, *VB.NET*, Scitech Publications (India) Pvt. Ltd, Chennai, Reprint, March 2014.

Chapters:

Unit – I : 1, 5, 6

Unit – II : 10, 15

2. Matthew MacDonald, *The Complete Reference ASP. NET*, Tata McGraw-Hill, Fifteenth Reprint 2006.

Chapters:

Unit – III : 5, 6

Unit – IV : 7, 9

Unit - V : 15, 16

Reference Books:

1. Francesco Balena, *Programming Microsoft Visual Basic Net (Core Reference)*, Microsoft Press, India, 2nd Edition, 2002.
2. Gary Bronson J & David Rosenthal, *Introduction to Programming with Visual Basic .Net*, Jones & Bartlett Learning, Canada, 1st Edition, 2004.
3. Michael McMillan, *Object-Oriented Programming with VB .Net*, Cambridge University Press, UK, 1st Edition, 2004.
4. Shirish Chavan, *Visual Basic .Net*, Pearson Education, India, 1st Edition, 2003.
5. Vikas Gupta, *.NET 4.0 Programming Course Kit*, Dreamtech Press, New Delhi, 2012.

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Title of the Paper	: Core - Data Structures and Algorithms	Contact Hours	: 4
Semester	: IV	Credits	4
Sub Code	: 17S42		

Objectives:

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

Unit - I

Stacks and Queues: The Stack Abstract Data Type - The Queue Abstract Data Type - Subtyping and Inheritance in C++ - A Mazing Problem, Evaluation of Expressions.

Unit - II

Linked Lists: Singly Linked Lists and Chains - Representing Chains in C++ - The Template Class Chain - Circular Lists - Doubly Linked Lists.

Unit - III

Trees: Introduction – Binary Trees - Binary Tree Traversal and Tree Iterators – Heaps - Binary Search Trees. **Graphs:** The Graph Abstract Data Type – Elementary Graph Operations .

Unit - IV

Computer Algorithms: Introduction: What is an Algorithm? – Algorithm Specification – Performance Analysis. **Divide and Conquer:** General method – Binary Search – Finding the maximum and minimum – Merge Sort – Quick Sort – Selection – Strassen's Matrix Multiplication.

Unit - V

The Greedy Method: General Method – Knapsack problem – Minimum cost spanning trees - Prim's Algorithm – Kruskal Algorithm – Optimal Storage on tapes – Optimal merge patterns – Single - Source Shortest Paths.

Text Books:

1. Ellis Horowitz, Sarataj Sahni, Sanguthevar Rajasekaran, *Fundamentals of Data Structures in C++*, Universities Press Pvt Ltd, Hyderabad, 2nd Edition, 2007.

Chapters :

Unit – I : 3.2 to 3.6

Unit – II : 4.1 to 4.4, 4.10

Unit – III : 5.1 to 5.3, 5.6, 5.7, 6.1, 6.2

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

Chapters :

Unit - IV : 1.1 to 1.3, 3.1, 3.3 to 3.8

Unit - V : 4.1, 4.3, 4.5, 4.6.1, 4.6.2, 4.7, 4.9

Reference Books:

1. Alfred V. Aho, John E. Hopcraft and Jeffrey D. Ullman, *Data Structures and Algorithms*, Pearson Education, Fourteenth Impression, 2013.
2. Ananda Raa Akepogu, Radhika Raju Palagiri, *Data structures & algorithms using C++*, Dorling kindersely (India) Pvt. Ltd, Pearson Education, 2011.
3. Mark Allen Weiss, *Data structures & algorithms analysis in C++*, Dorling kindersely (India) Pvt. Ltd, Pearson Education, 1st Edition, 2007.
4. Rick Decker & Stuart Hirshfield, *Working with classes: Data structures and Algorithms using C++*, Mass Market, 1st Edition, 1995.
5. Subramanyam P.S., *C and C++ Programming concepts and Data Structures*, BS Publications, 2013.

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Title of the Paper	: Core - Data Structures and Algorithms Lab	
Semester	: IV	Contact Hours : 3
Sub Code	: 17S4P	Credits 3

Data Structures:

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

Algorithms:

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

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(w.e.f. 2017 – 2018 Batch onwards)

Skill Based Elective – IV

Title of the Paper	: DOT NET Lab	
Semester	: IV	Contact Hours: 2
Sub Code	: 17SES4P	Credits 2

List of Programs:**Window Applications:**

1. Mathematical Functions using *ComboBox*
2. Change Font and color of text using *Dialog Controls*
3. Date of birth Calculation using *DateTimePicker*
4. Add or Remove Items using *ListBox*
5. Animation of a car using *Graphic Device Interface*.

Console Applications:

6. Matrix Summation using *Arrays*
7. Factorial of odd and even numbers using *Functions*
8. Display Rectangle Shape using *Procedures*
9. EB Bill calculation using *Structures*
10. Tribonacci Series using *Inheritance*

ASP.NET Program

11. Generation of Fibonacci Series
12. String Manipulation
13. Math Functions

14. Simple and Compound Interest Calculation
15. Adding and Removing Item in DropDownList
16. Display Pictures using ADRotator
17. Displaying DataBase Information in GridView
18. Creating SignUp Page using Validation Control
19. Click Event Creation
20. Repeater Control using ADO.NET

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Title of the Paper	: Core – Operating Systems	
Semester	: V	Contact Hours: 5
Sub Code	: 17S51	Credits 4

Objectives:

To learn the concept of Operating System and its functions.

Unit: I

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

Unit: II

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

Unit: III

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

Unit: IV

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

Unit: V

File System: File concepts - Access Methods - **File System Implementation:** File System Structure - Allocation Methods - Free Space Management. **Mass-Storage Structure:** Overview of Mass Storage Structure - Disk Structure - Disk Scheduling - Disk Management -Swap Space Management. **The Linux System:** Design Principles- Kernel Modules - Process Management - Scheduling - Interprocess communication - Network Structure-Security.

Text book:

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

Chapters:

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

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

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

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

Unit- V : 9.1, 9.2, 10.1, 10.4, 10.5, 11.1, 11.2, 11.4 - 11.6,
15.2, 15.3, 15.4, 15.5, 15.9, 15.10, 15.11.

Reference Books:

1. Achyut Godbole S, *Operating Systems*, Tata McGraw Hill Education, India, 2nd Edition , 2005.
2. Dhamdhare D M, *Operating systems (A concept- based approach)*, Tata McGraw Hill Education, India, 2nd Edition, 2006.

3. Milan Milenkovic, *Operating System Concepts and Design*, Tata McGraw Hill Education, India, 2nd Edition, 2001.
4. Pramod Chandra Bhatt, *An Introduction to Operating Systems*, Concepts and Practice, PHI Learning Pvt. Ltd., Delhi, 3rd Edition, 2003.
5. William Stallings, *Operating Systems: Internals and Design Principles*, Pearson Education, India, 6th Edition, 2010.

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Title of the Paper	: Core - Software Engineering	
Semester	: V	Contact Hours: 5
Sub Code	: 17S52	Credits 4

Objective:

To be aware of different life cycle Models- Analysis- Design- Implementation- Testing- SCM and Quality Assurance.

Unit: I

Software and Software Engineering: The Nature of Software – Software Engineering – The Software Process. **Process Models:** A Generic Process Model – Process Assessment and Improvement – Prescriptive Process Models – Specialized Process Models – The Unified Process – Personal and Team Process Models. **Agile Development:** What is Agility? – Agility and the Cost of Change – What is an Agile Process?

Unit: II

Understanding Requirements: Requirements Engineering – Establishing the Groundwork – Eliciting Requirements – Building Requirements Model. **Requirements Modeling: Scenarios- Information- and Analysis Classes:** Requirement Analysis – Scenario-Based Modeling – UML Models That Supplement The Use Case – Data Modeling Concepts – Class-Based Modeling.

Unit: III

Design Concepts: Design Concepts – The Design Model. **Architectural Design:** Software Architecture – Architectural Design. **Component-Level Design:** What Is a Component? – Designing Class-Based Components. **User Interface Design:** User Interface Analysis and Design – Interface Design Steps.

Unit: IV

Software Quality Assurance: Elements of Software Quality Assurance – Software Reliability. **Software Testing Strategies:** A Strategies Approach to Software Testing – Test Strategies for Conventional Software – Validation Testing – System Testing – The Art of Debugging. **Test Conventional Applications:** Software Testing Fundamentals – White-Box Testing – Basis Path Testing – Control Structure Testing – Black-Box Testing.

Unit: V

Software Configuration Management: Software Configuration Management – The SCM Repository – The SCM Process. **Project Scheduling:** Project Scheduling – Scheduling. **Risk Management:** Risk Identification – Risk Projection – Risk Refinement. **Maintenance And Reengineering:** Software Maintenance – Business Process Reengineering – Software Reengineering – Restructuring.

Text Book:

Roger S. Pressman, *Software Engineering*, McGraw. Hill International Edition, 7th Edition, 2010.

Chapters:

Unit- I : 1.1, 1.3, 1.4, 2.1 - 2.6, 3.1 - 3.3

Unit -II : 5.1 - 5.3, 5.5, 6.1 - 6.5

Unit -III : 8.3, 8.4, 9.1, 9.4, 10.1, 10.2, 11.2, 11.3

Unit- IV : 16.2, 16.6, 17.1, 17.3, 17.6 - 17.8, 18.1, 18.3 - 18.6

Unit- V : 22.1 - 22.3, 27.2, 27.5, 28.3 - 28.5, 29.1, 29.4, 29.5, 29.7

Reference Books:

1. Dhanalakshmi R, *Software Engineering*, Charulatha Publications, Chennai, 2nd Edition, 2008.

2. Frank Tsui, *Essentials of Software Engineering*, Jones and Bartlett India Private Limited, New Delhi, 2nd Edition, 2010.
3. James Peters F & Witold Pedryez, *Software Engineering – An Engineering Approach*, John Wiley and Sons, New Delhi, 2nd Edition, 2000.
4. Pankaj Jalote, *An Integrated Approach to Software Engineering*, Springer Verlag, India, 3rd Edition, 2001.
5. Richard Fairley E, *Software Engineering Concepts*, Tata McGraw Hill, New Delhi, Reprint 2011.

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Title of the Paper	: Core – RDBMS	Contact Hours: 5
Semester	: V	Credits 4
Sub Code	: 17S53	

Objectives:

Make the students to gain knowledge in RDBMS- both in terms of use and implementation/design and Experience with SQL.

Unit: I

Introduction to Database Management System (DBMS): Introduction - Why a Database-Characteristics of Data in Database- Database Management System- Why DBMS- Types of Database Management Systems. **Introduction to Relational Database Management System (DBMS):** Introduction- RDBMS Terminology- The Relational Data Structure- Relational Data Integrity- Relational Data Manipulation. **Database Architecture and Data Modeling:** Introduction- Conceptual- Physical and Logical Database Models- Database Design- Design Constrains- Functional Dependencies.

Unit :II

Entity-Relationship (E-R) Modeling: Introduction- E-R Model- Components of an E-R Model- E-R Conventions- Relationship- E-R Diagram (ERDs)- E-R Modeling Symbols. **Data Normalization:** Introduction- First Normal Form(1NF)- Second Normal Form(2NF)- Third Normal Form(3NF)- Boyce-Codd Normal Form(BCNF)- Forth Normal Form(4NF)- Fifth Normal Form(5NF)- Domain-key Normal Form(DKNF)- Denormalization. **Structured Query Language (SQL):** Introduction- Characteristics of SQL- Advantages of SQL- SQL in Action- SQL Data type and Literals- Types of SQL

commands- SQL Operators- Arithmetic Operators- Comparison Operators- Logical Operators- Set Operators.

Unit :III

Relational Algebra and Relational Calculus: Relational Algebra- Relational Calculus. **Tables- Views and Indexes:** Tables- Views- Indexes. **Aggregate Functions:** Introduction- General Rules- COUNT () and COUNT (*) - SUM ()- AVG()- MAX()- AND MIN(). **Insert- Update and Delete Operations:** Introduction- INSERT statement- Bulk insert of Data- UPDATE Statement- and Delete Statement.

Unit :IV

Joins and Unions: Joins- Unions. **Triggers:** Introduction- What is Trigger?- Types of Triggers- Trigger Syntax- Combining Trigger Types- Setting Inserted Values- Disabling and Enabling Triggers- Advantages and Limitations of Triggers. **Cursor:** Introduction- Cursor Operations- Cursor Positions- Cursor Coding Guidelines. **Data Integrity:** Introduction- Types of Integrity Constrains- Restrictions of Integrity constrains.

Unit: V

Database Security: Introduction- Database Environment- Data Security Risks- Complex User Management Requirements- Dimensions of Database security- Data Security Requirements- Protecting the Data within the Database- Granting and Revoking Privileges and Roles- Data Encryption- Database Integrity. **Transaction Management and Concurrency Control:** Introduction- Transactions- Transaction Properties- Database Structure- Transaction States- Concurrency Control- Serializability- Recoverability- Concurrency Control Schemes- Transaction Management in SQL- Transaction and Recovery User-defined Transactions- The COMMIT Command- The ROLLBACK command- The SAVEPOINT command.

Text Book:

Alexis Leon, Mathews Leon, *Database Management Systems*, Vikas Publishing House Pvt.Ltd, New Delhi, Copyright @1999.

Chapters:

Unit- I : 5, 7, 8

Unit -II : 9, 11, 14

Unit -III : 12, 15, 18, 19

Unit -IV : 20, 21, 25, 28

Unit -V : 27, 29

Reference Books:

1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan , *Database System Concept*, McGraw - Hill Education , 1st Edition, 2005.
2. Bipin C. Desai, *An Introduction to Database Systems*, West Publishing Company 1st Edition , 1997.
3. Jeffrey A. Hoffer, Mary B. Prescott, Fred R. McFadden, *Modern Database Management* , Prentice Hall, 10th Edition, 2006.
4. Peter Rob, Carlos M. Coronel, *Database Systems: Design, Implementation, and Management*, Course Technology, 2006.
5. Raghu Ramakrishnan, Johannes Gehrke, *Database Management Systems*, McGraw-Hill, 3rd Edition, 2002.

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1. Data Manipulation Language (DML)
2. Data Control Language (DCL)
3. Data Retrieval Language (DRL)
4. Transitional Control Language (TCL)
5. Data Control Language (DCL)
6. Integrity Constraints.
7. High Level Language Extensions with Cursors.
8. High Level Language Extension with Triggers.
9. String Functions & Date Functions.
10. Aggregate Functions.

PL/SQL

11. Design and Implementation of Payroll Processing System.
12. Design and Implementation of Banking System.
13. Write a Procedure Program to find Prime number using For... Loop
14. Write a Procedure Program to get Customer details and Display in console.
15. Design and Implementation of Library Information System.
16. Design and Implementation of Student Information System.
17. Automatic Backup of Files and Recovery of Files.
18. Procedures and Functions.
19. Create TRIGGER to Maintain Customer details. (Insert- Delete and Update)
20. Create a Procedure to implement Implicit and Explicit Cursors.

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Elective-I

Title of the Paper	: Computer Graphics	
Semester	: V	Contact Hours: 5
Sub Code	: 17SE5A	Credits 5

Objectives:

To imbibe the knowledge in graphics in order to enable them to draw desired figures

Unit: I

Introduction to CG: A Survey of computer Graphics-Video Display Devices-Raster-Scan Systems-Random-Scan systems-Input Devices-Graphics software.

Unit: II

Output Primitives: Point and Lines. **Line-Drawing Algorithms:-DDA** Algorithm- Bresenham's Line algorithm – Character Generation. **Attributes of Output Primitives:** Line Attributes – Curve Attributes – Area-Fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions.

Unit: III

Two-Dimensional Geometric Transformations: Basic Transformations - Matrix Representations – Composite Transformations – Other Transformations. **Two-Dimensional Viewing:** Two Dimensional Viewing Functions – Clipping Operations – Point Clipping. **Line clipping:** Cohen-Sutherland Line Clipping. **Polygon Clipping:** Sutherland-Hodgeman polygon – Curve Clipping – Text Clipping – Exterior Clipping.

Unit: IV

Three-Dimensional Concepts: Three- Dimensional Display Methods – Three-Dimensional Graphics Packages. **Three- Dimensional Object Representations:** Polygon Surfaces – Curved Lines and Surfaces – Quadric Surfaces – Super quadrics.

Unit: V

Color Models: Properties of Light – RGB Color Model – YIQ Color Models – CMY Color Model – HSB Color Model – Color Selection and Applications. **Computer Animation:** Design of Animation Sequences – General Computer Animation – Raster animations – Computer Animation languages – Key-Frame Systems.

Text Book:

Donald Hearn & Pauline Baker M, *Computer Graphics C Version*, Pearson Education, India, 2nd Edition, 2009.

Chapters:

Unit -I : 1, 2.1- 2.3, 2.5, 2.7

Unit -II : 3.1, 3.2, 3.14, 4.1 - 4.7

Unit -III : 5.1 - 5.4, 6.4 - 6.11

Unit -IV : 9.1, 9.2, 10.1 - 10.4

Unit -V : 15.1, 15.4- 15.7, 15.10, 16.1 - 16.5

Reference Books:

1. Dr. Jeffrey & McConnell J, *Computer Graphics Theory into practice*, Jones & Bartlett publishers, Sudbury, 1st Edition, 2006.
2. Parslow R D & Prowse R W, *Computer Graphics: Techniques and Applications*, Richard Elliot Green, USA, 7th Edition, 2001.
3. Peter Shirley, *Fundamentals of Computer graphics*, A.k.Peters Ltd, Wellesley, United States, 2nd Edition, 2002.
4. Steven Harrington, *Computer Graphics: A programming Approach*, Tata McGraw-Hill, India 4th Edition, 2005.
5. William Newman M & Robert Sproull F, *Principles of Interactive Computer Graphics*, Tata McGraw-Hill Education, India, 4th Edition, 2000.

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CBCS**DEPARTMENT OF COMPUTER SCIENCE-UG**

(w.e.f. 2017 – 2018 Batch onwards)

Elective-I

Title of the Paper	: Cloud Computing	
Semester	: V	Contact Hours: 5
Sub Code	: 17SE5B	Credits 5

Objectives:

To appreciate the emergence of cloud as the next generation computing paradigm

Unit: I

Introduction to Cloud Computing: Introduction – Characteristics of Cloud Computing – Cloud Models- Service Models- Deployment Models- Cloud service examples- IaaS-PaaS-SaaS.

Unit: II

Cloud Concepts and Technologies- Virtualization- load Balancing – Scalability & Elasticity – Deployment – Replication – Monitoring – Software defined Networking – Network function Virtualization – Map Reduce – Identify and Access Management- Service Level Agreements.

Unit: III

Cloud Services & Platforms: Compute services – Storage Services – Database Services – Application services – Content delivery Services – Analytical Services – Deployment & management Services – Identity & Access Management Services – Open Source Private Cloud Software.

Unit: IV

Hadoop & mapReduce: Apache Hadoop – Hadoop MapReduce Job Execution – Hadoop Schedulers – Hadoop Cluster Setup

Unit: V

Developing for Cloud: Cloud application Design – Reference Architecture for Cloud Applications – Cloud Application Design Methodologies – Data Storage Approaches. .

Text Book:

Arshdeep Bahga vijay madiseti- *Cloud Computing*- University press (India) private Limited- Reprinted 2016.

Chapters:

- Unit -I** : 1.1 - 1.4
- Unit -II** : 2
- Unit -III** : 3.1 - 3.9
- Unit -IV** : 4.1 - 4.4
- Unit -V** : 5.1 - 5.5

Reference Books:

1. Erl, *Cloud Computing: Concepts, Technology & Architecture*, Pearson Edition, New Delhi, 2006
2. John Rittenhouse and James Ransome, *Cloud Computing Implementation Management and Strategy*, CRC Press 2010.
3. Rajkumar Buyya, Christian Vecchiola, S. Thamarai Selvi, *Mastering Cloud Computing*, Tata McGraw-Hill, 2013.
4. Toby Velte Anthony Velte, Robert C. Elsenpeter, *Cloud Computing, A Practical Approach*, Tata McGraw-Hill Edition, 2010.
5. Tom White, *Hadoop: The Definitive Guide*, O' Reilly Media, 4th Edition, 2015.

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Title of the Paper	: Python Lab	
Semester	: V	Contact Hours: 2
Sub Code	: 17SES5P	Credits 2

List of Python Programs:

1. Print the Message of 'Hello World'
2. Add Two Numbers
3. Volume of Cube
4. Convert Celsius to Fahrenheit
5. Largest number among the three input numbers
6. The given number is odd or even
7. Display all the prime numbers within an interval
8. The factorial of a number
9. Find the given year is a leap year or not
10. The given number is Armstrong Number or not
11. Count the number of each vowel in a String
12. A given string is palindrome or not
13. Display the Fibonacci sequence
14. Calculate the square root
15. Swap two variables
16. Display the multiplication table
17. Display calendar of given month of the year
18. Add two matrices
19. Display Record from the College time table using Database Creation
20. Create Database Table using Employee details

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(w.e.f. 2017 – 2018 Batch onwards)

Title of the Paper	: Core-Data Communication and Networking		
Semester	: VI	Contact Hours:5	
Sub Code	: 17S61	Credits	4

Objective:

To acquire knowledge about transmission media- LAN- ISDN- ATM- Transport Layer concept.

Unit :I

Introduction – Data Communications – Networks – The Internet – Protocols and Standards . **Network Models:** The OSI Model- Layers in the OSI Model.

Unit :II

Transmission Media – Guided Media- Unguided Media: Wireless. **Switching:** Circuit Switched Network- Datagram Networks- Virtual Circuit Networks- Structure of a Switch.

Unit :III

Error Detection and Correction: Introduction- Block Coding- Linear Block Codes- Cyclic Codes. **Network Layer:** Logical Addressing: IPv4 Addresses- IPv6 Addresses.

Unit :IV

Network Layer: Delivery- Forwarding and Routing: Unicast Routing Protocols-Multicast Routing Protocols. **Process-to-Process Delivery: UDP- TCP and SCTP:** User Datagram Protocol (UDP)-TCP. **Domain Name System:** DNS in the internet.

Unit :V**Network Security: Security Services-Message Confidentiality-Message Integrity-
Message Authentication-Digital Signature-Entity Authentication-IPSecurity-Firewalls****Text Book:**

Behrouz Forouzan A, *Data Communications and Networking*, Tata Mc Graw Hill-
New Delhi, 4th Edition, 2006.

Chapters:

- Unit -I** : 1.1-1.4, 2.2, 2.3
Unit -II : 7.1, 7.2, 8.1-8.4
Unit-III : 10.1-10.4, 19.1, 19.2
Unit-IV : 22.3, 22.4, 23.2, 25.4
Unit-V : 31.1-31.6, 32.1, 32.4

Reference Books:

1. Comer, *Computer Networks & Internet with Internet Applications*, Pearson Education, Pearson Prentice Hall, New Delhi ,4th edition, 2000.
2. Halsai F, *Data communications, Computer Network and Open systems*, Addison Wesley Publications, New Delhi, 5th edition, 2004.
3. Simin Haykins S, *Communication System*, Tata McGraw- Hill, New Delhi, 2nd edition, 2003.
4. Tanenbam S, *Computer Network*, PHI Prentice Hall, New Delhi, 6th edition, 2005.
5. William Stallings, *Data and Computer Communication Network*, Tata McGraw Hill, New Delhi, 2nd edition, 2004.

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(w.e.f. 2017 – 2018 Batch onwards)

Title of the Paper	: Core-Web Programming	
Semester	: VI	Contact Hours:5
Sub Code	: 17S62	Credits 4

Objective: To enable to create their own website in the Internet.

Unit: I

Introduction to HTML5: Introduction-Editing HTML5-First HTML5 Example-W3C HTML5 Validation Service-Headings-Linking-Images-Special Characters and Horizontal Rules-Lists-Tables-Forms-Internal Linking-Meta Element-New HTML5 Form input Types.**Introduction to Cascading Style Sheets™(CSS):** Introduction – Inline Styles-Embedded Style Sheets- Linking External Style Sheets-Backgrounds-Color.

Unit: II

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

Unit: III

XML –Introduction-XMLBasics-Structuring Data-XML Namespaces-Document Type Definition (DTD)-W3C XML Vocabularies-Extensible Stylesheet Language and XSL Transformations-Document Object Model (DOM).

Unit: IV

Introducing PHP: What is PHP –**Server-Side Scripting Overview** : Static HTML – Client-Side Technologies – Server-Side Scripting - **Getting Started with PHP:**

Installing PHP - **Learning PHP Syntax and Variables** : PHP Syntax's Syntax Is C-Like
 – Comments – Variables – Types in PHP – The Simple Types – Doubles – Booleans –
 NULL – Strings – Output .

Unit: V

Learning PHP Control Structures and Functions : Boolean Expressions –
 Branching – Looping – Using Functions – Function Documentation – Defining Your
 Own Functions – Functions and Variable Scope – Function Scope –**Learning PHP
 String Handling** : Strings in PHP - String Functions.

Text Books:

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

Chapters:

Unit -I : 2.1-2.13,3.2,4.1-4.3,4.5,4.8,5.4

Unit -II : 6.1, 6.2, 9.3,9.8, 10.2,10.3,10.7,10.10,11.3,11.6,11.8

Unit -III : 15.1-15.9

2. Steve Suehring, Tim Converse and Joyce Park , *PHP6 and MySQL*,
 Wiley Publishers, 3rd Edition ,2014 .

Chapters:

Unit- IV : 1, 2, 3, 4

Unit -V : 5, 7

Reference Books:

1. Achuyt God bole S & Atul Kahate , *Web Technologies*, TMH Publications,
 New Delhi, 2nd Edition, 2005.
2. Akilandeswari J & Gopalan NP, *TCP/IP to Internet Application Architecture*,
PHI Publications, New Delhi,2nd Edition, 2007.
3. Ivan Bayross, *Web Technologies part II*, BPB publications, NewDelhi,
 2nd Edition, 2007.

4. W. Jason Gilmore, *Beginning PHP and MySQL: From Novice to Professional*
Dreamtech Press ,4th Edition, 2010.
5. Vikram Vaswani , *PHP: A BEGINNER'S GUIDE*, Tata McGraw Hill
Education, New Delhi, 5th Edition, 2007.

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Title of the Paper	: Core-Web Programming Lab	Contact Hours : 6
Semester	: VI	Credits 3
Sub Code	: 17S6P	

List of Programs:**HTML:**

1. HTML Documents using Basic tags.
2. Images using link.
3. Menu using Ordered and Unordered list.
4. Web page using Table tags and their attributes.
5. Personal profile web page using form.
6. College application form using form and frames.
7. Mark sheet using frame and form.
8. On-line application forms for any one application.
9. Web page using in-line style sheets.
10. Web page using external style sheets.

CSS:

11. CSS embedded style settings.
12. CSS colors and positioning elements.
13. Document using CSS.

JAVA SCRIPT:

11. Arithmetic Operations
12. Color Palette
13. Preparing class average

14. Window Objects

15. Array objects

16. Usage of cookies

XML:

16. Text string into an XML DOM object

PHP:

17. Objects

18. Arrays

19. Functions

20. Session and Cookies.

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To acquire knowledge about retrieval of data from voluminous data in a desired manner.

Unit :I

Data warehousing: Introduction- data warehouse architecture-dimensional modeling - OLAP Server-ROLAP- data Marting - ETL- Data Cleaning -ETL vs. ELT.

Data Mining: Introduction –What is Data Mining?-Data Mining: Definition - KDD vs. Data Mining – DBMS vs. DM- other related areas- DM techniques –Issues and Challenges in Data Mining – Data mining application areas.

Unit : II

Clustering Techniques: Introduction- Clustering paradigms – Partitioning algorithm – *k*-Medoids Algorithms – CLARA – Hierarchical Clustering - DBSCAN – BIRCH – STIRR-ROCK. **Decision Trees:** Introduction – What is Decision Trees? - Tree Construction Principle - Decision Tree construction with presorting– CLOUDS-pruning technique.

Unit : III

Association Rules: Introduction-What is an Association Rule?- Methods to Discover Association Rules - Apriori Algorithm – Partition algorithm - Dynamic Itemset Counting algorithm - FP-tree growth algorithm - Eclat and dEclat – Incremental Algorithm-Border Algorithm - Generalized Association Rule. **Other techniques:**

Introduction- What is neural network? - Learning in NN – Unsupervised Learning – Support Vector Machine.

Unit : IV

Genetic algorithm: Introduction-Basic steps of GA-Selection-Crossover-Mutation-Data Mining Using GA. **Web mining:** Introduction – Web Mining - Web Content mining – Web structure mining – Web usage mining. **Temporal and Spatial Mining:** Introduction-What is Temporal Data Mining?- Temporal Association Rule - The GSP algorithm – SPADE - SPIRT - Event Prediction Problem-Time Series Analysis-Spatial Mining- Spatial Mining Tasks.

Unit : V

Introduction to Big Data: characteristics of data-evolution of big data-definition of big data-challenge with big data-what is big data?-what is changing in the realms of big data? **Introduction to Hadoop:** hadoop overview-hadoop distributed file system-processing data with hadoop-interacting with hadoop ecosystem. **Introduction to MAPREDUCE Programming:** Introduction –mapper-reducer-combiner-partitioner-searching-sorting-compression.

Text Books:

1. Arun k Pujari, *Data Mining Techniques* , Universities Press (India) Pvt Ltd, Hyderabad ,4thEdition, 2017.

Chapters :

Unit -I : 2.1-2.3, 2.10, 2.11, 2.22 - 2.25, 3.1- 3.7, 3.9, 3.10.

Unit- II : 5.1-5.5, 5.7-5.9, 5.12, 5.13, 6.1-6.3 6.13, 6.16, 6.18.

Unit -III : 4.1-4.5, 4.7-4.9, 4.12-4.14, 9.1-9.4, 9.6.

Unit -IV : 8.1-8.6,11.1-11.5, 12.1-12.3, 12.5-12.7, 12.10,12.13

2. Seema Acharya,Subhashini Chellappan ,*Big data and analytics*,Wiley India Pvt. Ltd, New Delhi,1st Edition,2015.

Chapter :

Unit -V : 2.1-2.5, 2.13, 5.7, 5.10, 5.11, 5.13, 8.1-8.8

Reference Books:

1. David J. Hand, Heikki Mannila, Padhraic Smyth, — *Principles of Data Mining* Massachusetts Institute of Technology, 2001.
2. Gajendra Sharma, *Data Mining & Data Warehouse OLAP*, TMH publications, New Delhi, 2nd Edition, 2006.
3. Jay Liebowitz, “*Big Data and Business Analytics*”, Au erbach Publications, CRC press, 2013
4. Jiawei Han & Micheline kamber , *Data mining Concepts & Techniques*, Morgon, Kaufmann Publishers, San Francisco,USA, 2nd Edition,2010.
5. Michael Minelli, Michele Chamboss, Ambiga Dhiraj , "*Big Data, Big Analytics*” John Wiley, 2014.

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Title of the Paper	: Mobile Computing	
Semester	: VI	Contact Hours: 5
Sub Code	: 17SE6B	Credits 5

Objective:

To gain knowledge and understanding of mobile computing from different viewpoints.

Unit :I

Introduction: Mobile Computing – Networks – Application and Services – Developing Mobile Computing Applications – Security in Mobile Computing. **Mobile Computing Architecture:** Architecture for Mobile Computing – Three-tier Architecture – Design Considerations for Mobile Computing – Mobile Computing through Internet – Making Existing Applications Mobile-enabled.

Unit : II

Mobile Computing through Telephony: Multiple Access Procedures – Satellite Communication Systems – Mobile Computing through Telephone – Developing an IVR Application – Voice XML – Telephony Application Programming Interface (TAPI) – Computer Supported Telecommunications Applications. **Emerging Technologies:** Introduction – Bluetooth – Radio Frequency Identification (RFID) – Wireless Broadband (WIMAX) – Mobile IP.

Unit : III

Global System for Mobile Communications (GSM): Global System for Mobile Communications – GSM Architecture – GSM Entities – Call Routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM

Frequency Allocation. **General Packet Radio Service (GPRS):** Introduction – GPRS and Packet Data Network – GPRS Network Architecture – GPRS Network Operations – Data Services in GPRS – Applications for GPRS – Limitations of GPRS – Billing and Charging in GPRS – Enhanced Data Rates for GSM Evolution (EDGE).

Unit : IV

Getting an Overview of Android: Introducing Android – Listing the Version History of Android Platform – Discussing Android APIs – Describing the Android Architecture – Application Framework – Exploring the Features of Android – Discussing about Android Applications – The Application Components – The Manifest File – Downloading and Installing Android – Downloading and Installing the Android SDK – Setting up Android Virtual Device – Setting up Android Physical Device – Exploring the Development Environment – The Java Perspective Using Eclipse – The DDMS Perspective – The Command-Line Tools – Developing and Executing the First Android Application – Using Eclipse IDE to Create an Application – Running Your Application – Exploring the Application – Using Command-Line Tools.

Unit : V

Using Activities- Fragments- and Intents in Android: Working with Activities – Creating an Activity – Starting an Activity – Managing the Lifecycle of an Activity – Applying Themes and Styles to an Activity – Displaying a Dialog in the Activity – Hiding the Title of the Activity – Using Intents – Exploring Intent Objects - Exploring Intent Resolution - Exploring Intent Filters - Exploring Intent Filter Collision – Linking the Activities Using Intent – Obtaining Results from Intent – Passing Data Using an Intent Object – Fragments – Fragments Implementation – Finding Fragments – Adding-Removing- and Replacing Fragments – Finding Activity Using Fragment – Using the Intent Object to Invoke Built-in Application.

Text Books:

1. Asoke Talukder, Hasan Ahmed, Roopa R Yavagal, *Mobile Computing*, Tata McGraw Hill Education Private Limited, 2nd Edition, Fourth reprint- 2012.

Chapters:

Unit- I : 1.3, 1.5, 1.7, 1.8, 1.9, 2.4 - 2.8

Unit- II : 3.2 - 3.8, 4.1- 4.5

Unit -III : 5.1 - 5.7, 5.9, 7.1 - 7.9

Text Book:

2. Pradeep Kothari- *Android Application Development (with KitKat Support)*

Black BookTM - Dreamtech press- Edition: 2014.

Chapters:

Unit -IV : 2

Unit- V : 3

Reference Books:

1. Agilandeewari L, Murali Babu K and Vinoth Babu K, *Mobile Computing*, Lakshmi Publications, Chennai, 1st Edition, 2009.
2. Behera G K, Pamudra Das L O, *Mobile Communication*, Scitech Publication of India, Chennai, 1st Edition, 2009.
3. Douglas B Terry, *Mobile Computing*, Kluwer Academic Publisher, NewDelhi, 1st Edition, 1996.
4. Jochen Schiller, *Mobile Communication*, Dorling Kindersley of India, Pearson Education, India, 2nd Edition, 2003.
5. Prasanna Kumar Dixit, *Android*, Vikas Publishing House Private Ltd., First Edition, 2014.

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DEPARTMENT OF COMPUTER SCIENCE- UG
(w.e.f. 2017 – 2018 onwards)
Elective III

Title of the Paper	: Project	
Semester	: VI	Contact Hours: 5
Sub Code	: 17SPR6	Credits 5

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

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

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

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

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

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(w.e.f. 2017 – 2018 Batch onwards)

Skill Based Elective – VI

Title of the Paper	: PHP Lab	
Semester	: VI	Contact Hours : 2
Sub Code	: 17SES6P	Credits 2

List of Programs:

1. Comparison Operators
2. Switch Case
3. Program Using Array
4. Sum and Reverse of the Digits
5. String Manipulation
6. Program Using Functions
7. Armstrong Number
8. Sum of Digits
9. Even Odd Number
10. Subtraction using form
11. Leap Year
12. Session
13. Cookies
14. Exception Handling
15. Form Validation
16. Upload a file to the Server.
17. Prime number list generation
18. Create a simple Registration form.
19. Create a Simple Calculator.
20. Login and Logout using session