Enclosure –II B

Shree Manibhai Virani and Smt. Navalben Virani Science College, Rajkot (Autonomous)
Affiliated to Saurashtra University, Rajkot

Department of Computer Science & Information Technology
B.Sc. INFORMATION TECHNOLOGY

OBJECTIVES OF THE PROGRAMME

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

- Explain and apply appropriate information technologies to help an individual or organization to achieve its goals and objectives.
- Manage the information technology resources of an individual or organization.
- Anticipate the changing direction of information technology and evaluate and communicate the likely utility of new technologies to an individual or organization.
- Demonstrate an understanding of best practices and standards and their application.
- Work in a team using common tools and environments to achieve project objectives.

SCHEME OF INSTRUCTION AND EXAMINATIONS
For Students Admitted from A.Y. 2016-2017 & Onwards

Semester - I							
Course Code	**Course**	**Hrs. of Instruction/ week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - I							
16ULCEN01	Functional English-I	3	3	40	60	100	3
Part - II							
16UITCC01	**Core 1:** Problem Solving Methodology and Programming in C	5	3	30	70	100	5
16UITCC02	**Core 2:** Information Technology and Computer Architecture	4	3	30	70	100	4
16UITDA01	**DSE-Allied 1:** Mathematics and Statistics - I	4	3	30	70	100	4
16UITCC03	**Core Practical 1:** Programming in C Practical	4	2	20	30	50	2
16UITCC04	**Core Practical 2:** PC Software Practical	4	2	20	30	50	2
		24				**500**	**20**
Part - III							
	AECC – 1: Environmental Science	1	-	-	-	-	-
16UVE01	**SEC – 1:** Value Education -1	1	-	Remarks			1
		26					

Semester - II							
Course Code	**Course**	**Hrs. of Instruction/ week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - I							
16ULCEN02	Functional English-II	3	3	40	60	100	3
Part - II							
16UITCC05	**Core 3:** Advanced C and Data Structure	4	3	30	70	100	4
16UITCC06	**Core 4:** Web Designing	3	3	30	70	100	3
16UITCC07	**Core 5:** Foundation of Networking	4	3	30	70	100	4
16UITDA02	**DSE-Allied 2:** Mathematics and Statistics -II	4	3	30	70	100	4
16UITCC08	**Core Practical 3:** Advanced C and Data Structure Practical	4	2	20	30	50	2
16UITCC09	**Core Practical 4:** Web Designing Practical	4	2	20	30	50	2
		26				**600**	**22**
Part - III							
	AECC-1 : Environmental Science	1	--	Remarks			2
16UVE02	**SEC 2:** Value Education -II	1	--	Remarks			1
		28					

Semester - III							
Course Code	**Course**	**Hrs. of Instruction/ week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - I							
16ULCEN03	Advanced English Language-I	3	3	40	60	100	3
Part - II							
16UITCC10	**Core 6:** Object Oriented Programming with JAVA	4	3	30	70	100	4
16UITCC11	**Core 7:** RDBMS using Oracle	4	3	30	70	100	4
16UITCC12	**Core 8:** Operating System Concept with Unix/Linux	4	3	30	70	100	4
16UITDA03	**DSE-Allied 3:** Web and M-Commerce Technologies	4	3	30	70	100	4
16UITCC13	**Core Practical 5:** Object Oriented Programming with JAVA Practical	4	3	40	60	100	2
16UITCC14	**Core Practical 6:** RDBMS using Oracle & Operating System Concept with Unix/Linux Practical	4	3	40	60	100	2
		27				**700**	**23**

Semester - IV							
Course Code	**Course**	**Hrs. of Instruction/ week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - I							
16ULCEN04	Advanced English Language-II	3	3	40	60	100	3
Part - II							
16UITCC15	**Core 9:** Programming with C#.NET	4	3	30	70	100	4
16UITCC16	**Core 10:** Web Development using PHP	4	3	30	70	100	4
16UITCC17	**Core 11:** Structured Object Oriented Analysis and Design Methodology	4	3	30	70	100	4
16UITDA04	**DSE-Allied 4:** Management Information System	3	3	30	70	100	3
16UITCC18	**Core Practical 7:** Programming with C#.NET Practical	4	3	40	60	100	2
16UCACC19	**Core Practical 8:** Web Development using PHP Practical	4	3	40	60	100	2
		26				**700**	**22**

Semester - V							
Course Code	**Course**	**Hrs. of Instruction/ week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - II							
16UITCC20	**Core 12:** Network Management & Information Security	4	3	30	70	100	4
16UITCC21	**Core 13:** Administration of SQL Server	4	3	30	70	100	4
16UITCC22	**Core 14:** Web services API- JSON/XML (self study)	1	2	15	35	50	4
16UITDC01/ 16UITDC02	**DSE Core 1:** Advanced JAVA Programming / Programming with ASP.NET	4	3	30	70	100	4
16UITCC23	**Core Practical 9:** Administration of SQL Server Practical	4	3	40	60	100	2
16UITDC03/ 16UITDC04	**DSE Core Practical 1:** Advanced JAVA Programming Practical / Programming with ASP.NET Practical	4	3	40	60	100	2
16UITCC24	**Core 15:** CBT	-	-	50	-	50	1
	Generic Elective -1	2	-	100	-	100	2
	Project	4	-	-	-	-	-
		27				**700**	**23**

Semester - VI							
Course Code	**Course**	**Hrs. of Instruction / week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - II							
16UITCC25	**Core 16:** Mobile Computing using Android	4	3	30	70	100	4
16UITCC26	**Core 17:** Software Testing and Project Management	4	3	30	70	100	4
16UITDC05 / 16UITDC06	**DSE Core 2:** MVC Design Pattern in PHP / MVC Design Pattern in .NET	4	3	30	70	100	4
16UITCC27	**Core Practical 10:** Mobile Computing using Android Practical	4	3	40	60	100	2
16UITDC07 / 16UITDC08	**DSE Core Practical 2:** MVC Design Pattern in PHP Practical / MVC Design Pattern in .NET Practical	4	3	40	60	100	2
16UITCC28	Project	6	3	60	40	100	4
	Generic Elective -2	2	-	100	-	100	2
		28				**700**	**22**
Total Marks : 3900							

Part - III						
Course Code	**Semester**	**Particulars**	**Hrs of instruction/week**	**No. of Courses**	**Credit/Course**	**Total Credits**
Ability Enhancement Compulsory Course (AECC)						
As per common list	I & II	**AECC-I** Environment Science	1	1	2	2
	IV & V	**AECC-II** Communication Skill/Soft Skills	2	2	1	2
					Sub Total	**4**
Skill Enhancement Course (SEC)						
As per common list	I	**SEC-I** Value Education-I	1	1	1	1
	II	Value Education-II	1	1	1	1
	Any Semester between II - V	**SEC-II** *Co-Curricular Course	> 40 hours in total	1	1	1
	Any Semester between II - V	**SEC-III** **Value Added Courses	40 hours in total	1	1	1
					Sub Total	4
					Grand Total	8

***Co-Curricular Courses** - Option to students to choose 1 from a list of courses offered by the college, such as Add on Courses, Gandhian Studies Certificate Course, Women Studies Course, etc.

****Value Added Courses** - Option to student to choose at least 1 from a list of courses offered by UG departments

- **TOTAL MARKS & CREDIT DISTRIBUTION**

S.NO	PART	Total Marks	Total Credits
1.	PART I: Language Course	400	12
2.	PART II : Core, DSE Allied, DSE Core, GE	3500	120
3.	PART III: AECC-I & II, SEC-I, II & III	Remarks	08
	TOTAL	**3900**	**140**

- **PART – I : LANGUAGE COURSE**

The following are compulsory courses offered in first to fourth semesters.

S. No	Semester	Course Code	Course
1.	I	16ULCEN01	Functional English-I
2.	II	16ULCEN02	Functional English-II
3.	III	16ULCEN03	Advanced English Language-I
4.	IV	16ULCEN04	Advanced English Language-II

- **PART – II : CORE, DSE ALLIED, DSE CORE, GE**

CORE COURSES [Theory]

S. No	Semester	Course code	Course
1.	I	16UITCC01	Problem Solving Methodology and Programming in C
2.		16UITCC02	Information Technology and Computer Architecture
3.	II	16UITCC05	Advanced C and Data Structure
4.		16UITCC06	Web Designing
5.		16UITCC07	Foundation of Networking
6.	III	16UITCC10	Object Oriented Programming with JAVA
7.		16UITCC11	RDBMS using Oracle
8.		16UITCC12	Operating System Concept with Unix/Linux
9.	IV	16UITCC15	Programming with C#.NET
10.		16UITCC16	Web Development using PHP
11.		16UITCC17	Structured Object Oriented Analysis and Design Methodology
12.	V	16UITCC20	Network Management & Information Security
13.		16UITCC21	Administration of SQL Server
14.		16UITCC22	Web services API- JSON/XML (self study)
15.		16UITCC24	Computer Based Test
16.	VI	16UITCC25	Mobile computing using Android
17.		16UITCC26	Software Testing and Project Management

CORE COURSES [Practical]

S. No	Semester	Course code	Course
1.	I	16UITCC03	Programming in C
2.		16UITCC04	PC Software
3.	II	16UITCC08	Advanced C and Data Structure
4.		16UITCC09	Web Designing
5.	III	16UITCC13	Object Oriented Programming with JAVA
6.		16UITCC14	RDBMS using Oracle and Operating System Concept with Unix/Linux
7.	IV	16UITCC18	Programming with C#.NET
8.		16UITCC19	Web Development using PHP
9.	V	16UITCC23	Administration of SQL Server
10.	VI	16UITCC27	Mobile Computing using Android

- **OTHER CORE COURSES**

S. No.	Semester	Course Code	Course
1	V-VI	16UITCC28	Project

- **DSE ALLIED COURSES [Theory]**

S. No.	Semester	Course code	Course
1.	I	16UITDA01	Mathematics and Statistics –I
2.	II	16UITDA02	Mathematics and Statistics -II
3.	III	16UITDA03	Web and M-Commerce Technologies
4.	IV	16UITDA04	Management Information System

- **DSE CORE COURSES [Theory & Practical]**
  Students are required to opt for any one of the courses offered in 5^{th} & 6^{th} semesters respectively.

S. No	Semester	Theory		Practical	
		Course code	Course	Course code	Course
1.	V	16UITDC01/	Advanced JAVA Programming/	16UITDC03/	Advanced JAVA Programming Practical/
		16UITDC02	Programming with ASP.NET	16UITDC04	Programming with ASP.NET Practical
2.	VI	16UITDC05/	MVC Design Pattern in PHP/	16UITDC07/	MVC Design Pattern in PHP Practical/
		16UITDC06	MVC Design Pattern in .NET	16UITDC08	MVC Design Pattern in .NET Practical

- **GENERIC ELECTIVE**

S. No	Semester	Course
1.	V	Any one course from list of courses offered across UG departments
2.	VI	

- **PART –III : AECC & SEC**

Part - III						
Course Code	**Semester**	**Particulars**	**Hrs of instruction/week**	**No. of Courses**	**Credit/Course**	**Total Credits**
Ability Enhancement Compulsory Course (AECC)						
As per common list	I & II	**AECC-I** Environment Science	1	1	2	2
	IV & V	**AECC-II** Communication Skill/Soft Skills	2	2	1	2
					Sub Total	**4**
Skill Enhancement Course (SEC)						
As per common list	I	**SEC-I** Value Education-I	1	1	1	1
	II	Value Education-II	1	1	1	1
	Any Semester between II - V	**SEC-II** *Co-Curricular Course	> 40 hours in total	1	1	1
	Any Semester between II - V	**SEC-III** **Value Added Courses	40 hours in total	1	1	1
					Sub Total	4
					Grand Total	8

***Co-Curricular Courses** - Option to students to choose 1 from a list of courses offered by the college, such as Add on Courses, Gandhian Studies Certificate Course, Women Studies Course, etc.

****Value Added Courses** - Option to student to choose at least 1 from a list of courses offered by UG departments.

Courses offered by the department to UG students of other departments

I. Generic Elective Course

S. No.	Semester	Course Code	Course	Name of Program
1	V			For all other UG Programs
2	VI			For all other UG Programs

B.SC. INFORMATION TECHNOLOGY

SEMESTER - I

16UITCC01	Core 1: Problem Solving Methodology and Programming in C	05 hrs/wk	5 Credits

Objectives:

To enable the students to

1. Understand the basic concepts of programming
2. Design algorithms and flow-charts to solve fundamental programming problems
3. Understand how to implement, dry-run and debug programs
4. Understand the memory allocation of numbers, alphabets and other characters using the concept of basic, derived and user defined data types
5. Understand how to write and use functions and parameter passing options
6. Understand the concept of control structures including looping and branching statement

Unit -1 Pre-programming techniques & Introduction to C (12 hrs)

- Importance of pre-programming techniques
- Pre programming tools:
  - Algorithm Flow charts
  - Writing algorithms and development of flowcharts with dry run for the given list of problems
- C Character sets
- Constants, Variables and Keywords in C
- Various Data Types
- Symbolic Constants
- C Preprocessor : #define, #include
- Type Casting
- Various Operators, Hierarchy of Operations

Unit -2 C program structure & Control Structure (12 hrs)

- Decision: if, if-else, Nested if-else, else-if ladder, Conditional (Ternary) operator, Switch Case
- Loops: for, while, do while, Nesting of loops
- Use of break an continue statements, goto with lable

Unit – 3 Functions **(12 hrs)**

- Built in Function & UDF
- Introduction to some popular header files and its library functions:
  <stdio.h> : printf(), scanf(), fflush(), gets(), puts()
  <conio.h>: getch(), getche(), getchar(), clrscr(), gotoxy(), textcolor(), textbackground(), cprintf()
  <math.h>: abs(), exp(), sqrt(), ceil(), floor(), pow(), fmod(), fabs()
  <ctype.h>: isalpha(), isdigit(), isalnum(), isspace(), isupper(), islower(), toupper(), tolower()]
- Different type of UDF (call by value only), Functions with no arguments no return value, Functions with no arguments with return value, Functions with arguments no return value, Functions with arguments with return value
- Creation of your library, Storage classes & scope of variables

Unit – 4 Array **(12 hrs)**

- Concept of Single & Two dimensional arrays
- Initializations & working with array
- Passing array elements to function
- Sorting of numeric & string array
- String operations
  - <string.h> : strlen(), strcpy(), strcmp(), strcat(), strrev(), strlwr(), strupr()

Unit – 5 Structure & Union **(12 hrs)**

- How to define a structure
- Accessing structure elements
- Array of structure, Array within structure,
- Union,
- Typedef
- Structure as function argument

Text Books

1. *Balagurusamy*, **Programming in ANSI C**, Tata McGraw-Hill Publishing Company Limited, New Delhi.

Reference Books

1. *Yashavant Kanetkar*, **Let Us C**, Published by BPB Publications, New Delhi.

16UITCC02	Core 2: Information Technology and Computer Architecture	04 hrs/wk	O4 Credits

Objectives:

To enable the students to

1. Understand the functions of a computer.
2. Identify types and characteristics of various generations of computers and various peripherals including storage and I/O.
3. Understand various numbering system.
4. Understand basics of computer architecture with various logic gates.
5. Understand Boolean algebra and simplification of it using various postulates.
6. Understand the concept of Digital Components and central processing unit.
7. Understand various stack organizations by register stack and memory stack.

Unit - 1 Introduction and Input Devices (10 hrs)

- Introduction to Computer
- Characteristics of Computer
- Data Processing Cycle (Data Process Information)
- Classification of Computer by Data Processed Analog, Digital and Hybrid Computers,
- History and Generations of Computers: First to Fifth Generation Computers
- Classification of Computer by Processing Capabilities: Micro - Mini - Mainframe and Super Computers
- Types of Input Devices: Keyboard, Mouse, Trackball, Glide, Pad, Joystick, Light Pen, Touch Screen, Mic (Sound Input), Camera (Photo and Video Input), Types of Scanners: OMR, MICR, OBR, Flat bed scanner, Handheld scanner

Unit - 2 Output and Storage Devices (10 hrs)

- Types of Output Devices: CRT, LCD, LED, Plasma Displays
- Types of Printers: Impact Printers and types (Dot Matrix Printer, Daisy Wheel Printer, Chain Printer, Drum Printer), Non Impact Printers and types (Ink Jet Printer, Laser Printer)
- Types of Storage Devices: Internal storage, RAM, SRAM, DRAM, SD, DDR, ROM, PROM, EPROM, EEPROM, External Storage with Storage Mechanism
- Floppy Disk, Hard Disk, Magnetic Tape, USB, CD, DVD, Blu-Ray Disk
- Ports: USB, Serial, Parallel, PS2
- Types of Processors

Unit - 3 Numbering System (10 hrs)

- Introduction to Binary Codes**:** Nibble, Bit, Byte, Carry Bit, Parity Bit, Sign Bit, KB, MB, GB, TB, HB
- Types of Numbering System: Binary, Octal, Decimal, Hexa Decimal
- Conversion: Binary to Octal, Decimal and Hexa Decimal, Decimal to Binary, Octal and Hexa Decimal, Octal to Binary, Decimal and Hexa Decimal, Hexa Decimal to Binary, Octal and Decimal

- Binary Arithmetic: Addition, Subtraction (1's Compliment and 2's Compliment), Division, Multiplication
- Types of Codes : ASCII, BCD, EBCDIC, UniCode

Unit – 4 Digital Logic Circuit (10 hrs)

- Logic Gates (AND, OR, NOT, NAND, NOR, Exclusive OR, Exclusive NOR gates), Universal Gate
- Boolean Algebra: Introduction to Boolean algebra, Boolean variable and Boolean function (Analog and Digital Signals)
- Truth table, Postulates, Theorem related to postulates, Simplified Boolean function using postulates with logical diagram of simplified function
- Sequential and Combinational Circuits: Clock pulses, Combinational circuit and sequential circuit after discussion of adders and flip flops, Flip Flops (SR, Clocked SR, D, JK, JK – Master Slave, T)

Unit – 5 Digital Component & Central Processing Unit (10 hrs)

- Integrated Circuits: Decoders (2 X 4, 3 X 8), Encoders (Octal to Binary – 8 X 3), Multiplexer (4 X 1), Demultiplexer (1 X 4)
- Register, Block diagram of register, Parallel register and shift register, Asynchronous 4-bits Binary Counter
- Introduction Of CPU, Major component of CPU
- General Register Organization (Control word, Accumulator Register), Stack Organization, Register stack, Memory stack
- Polish notation and reverse polish notation with example, Arithmetic and Logic Unit: Block diagram of ALU, Working of ALU.

Text Books:

1. *Pradeep K. Sinha*, 2002, **Foundations of Computing** [Third Edition], BPB Publications, New Delhi. (UNIT 1 to 3)
2. *M. Morris mano,* 2007, **Computer System Architecture** [Third Edition], PEARSON Education India, New Delhi. (UNIT 4 to 5)

Reference Books:

1. *A. Jaiswal*, 2003, **Fundamentals of Computer and Information Technology,** Dreamtech Press
2. *M. Morris mano,* 2004, **Digital Logic and Computer Design** [Second Edition], PEARSON Education India, New Delhi.
3. *A. Anand Kumar,* 2003, **Fundamentals of Digital Circuits** [Third Edition], PEARSON Education India, New Delhi

16UITCC03	Core Practical 1 : Programming In C	04 hrs/wk	02 Credits

- Practical based on C Programming Language.

16UITCC04	Core Practical 2 : PC Software	04 hrs/wk	02 Credits

- Practical of Word Processing, Spreadsheet and Presentation tools.

SEMESTER – II

16UITCC05	Core 3: Advanced C and Data Structure	04 hrs/wk	04 Credits

Objectives:

To enable the students to

1. Understand the concept of pointers and dynamic memory allocation.
2. Design data structures including linked list, stack, queue and tree by using static or dynamic implementations
3. Understand and implement sorting and searching techniques
4. Understand the basic concept of file handling
5. Demonstrate different methods for traversing trees
6. Understand the concept of recursion and describe how it can be implemented using a stack
7. Identify the benefits of dynamic and static data structures implementations.

Unit - 1 Pointer and UDF (10 hrs)

- Introduction
- Advantage of using pointer, Pointer arithmetic, Array & Pointer, Static & Dynamic Array, Pointer to Structure
- Call by value & call by reference function, Recursion, Array as a function argument, Structures as a function argument, Pointer as a function argument
- Memory allocation functions
    - malloc(), calloc(), realloc() and free()

Unit - 2 Data file handling (08 hrs)

- Concept of data files and file structure
- Opening and closing of data file, File modes
- File handling functions
    - fopen(), fclose(), fputc(), fgetc(), fputs(), fgets(), fprintf(), fscanf(), getw(), putw(), fseek(), ftell(), rewind(), freopen(), feof(), ferror(), fflush(), fgetpos()
- I/O operations
- Command line argument

Unit – 3 Sorting & Searching Techniques (10 hrs)

- Bubble sort, Selection sort, Insertion sort, Merge sort, Quick sort Searching Techniques: Linear search, Binary search

Unit - 4 Introduction to Data structure, Stack & Queue (10 hrs)

- Linear & Non-Linear Data Structure, Primitive and non-primitive Storage,
- **Stack :** Definition and concept, Operation on stack, Application of stack in recursion.
- **Queue :** Definition and concept, Operation on Queue, Circular Queue

Unit - 5 Linked List & Tree **(12 hrs)**

- **Linked List :** Definition and concept, Operation on linked list, Insertion at different position, Deletion from different position, Traversal Types of linked list: singly linked list, circular linked list, Doubly linked list, Sorting and Searching in linked list, Ordered singly linked list.
- **Tree :** Definition and concept, Operation on binary tree (create, traverse) (pre, post, in)

Text Books

1. *R. B. Patel*, 2004, **Expert data structure with C** [Second Edition], Khanna Book Publishing Pvt. Ltd.

Reference Books

1. *Yashavant Kanetkar*, 1997, **Understanding Pointer in C** [Second Edition], BPB Publications, New Delhi.
2. *Yashavant Kanetkar*, 2003, **Data Structure though C** [First Edition], BPB Publications, New Delhi.

16UITCC06	Core 4 : Web Designing	03 hrs/wk	03 Credits

Objectives:

To enable the students to

1. Understand the principles of designing effective, dynamic and interactive web pages.
2. Become familiar with graphic design principles that relate to web design and learn how to implement these theories into practice.
3. Develop skills in analyzing the usability of a web site.
4. Learn the language of the web: HTML and CSS.
5. Understand and use JavaScript to enhance HTML documents

Unit - 1 Introduction (08 hrs)

- Introduction to Internet
- What is HTML**,** Block Structure of HTML
- Basic tags : Texts formatting, Line breaks, Link, Color, Image, List creation, Table

Unit - 2 Introduction of Frame & Form (08 hrs)

- Use of Frame Tags
- HTML multimedia: HTML Plug-in, HTML Audio, HTML Video
- HTML FORM: Controls of Forms
- Introduction to HTML 5.

Unit - 3 Introduction of CSS (08 hrs)

- Use of CSS, Types of CSS, Creating class and id.
- CSS Properties: Background, Text, Font, Table, Border, Margin, Padding, Align, Image property.
- Page layouts: Use of DIV and SPAN tag. Introduction to DHTML

Unit - 4 Introduction to Javascript (08 hrs)

- Use of scripting language, difference between client side script and server side script,
- Javascript syntax, variables, Operators
- Control structures: Control statements, Looping statements, Sequential statements, Use of Dialog boxes, User defined functions, Built-in objects and properties: Number, Date, Math, String, Array. Browser Objects: History, Navigator, Window, Location, Built-in functions

Unit - 5 Use of Events **(08 hrs)**

- Mouse events, Keyboard events, Timer events, other events
- Javascript DOM: Methods and Properties. Cookies
- Error handling: throw and try catch block

Text Books

1. *Ivan Bayross*, 2009, **Web Enabled Commercial Application Development Using HTML, JavaScript, DHTML and PHP (English)** [Fourth Edition], Published by BPB Publications, New Delhi. (UNIT 1 to 5)

Reference Books

1. *Kogent Learning Solutions*, 2015, **Web Technologies HTML, Javascript, PHP, Java, JSP, ASP.NET, XML and AJAX Black Book**, Dreamtech Press, New Delhi
2. *Danny Goodman, Michael Morrison, Paul Novitski, Tia Gustaff Rayl*, 2010, **JavaScript Bible**, [Seventh Edition] Wiley Inc. IN

16UITCC07	Core 5: Foundation of Networking	04 hrs/wk	04 Credits

Objectives:

To enable the students to

1. Understand the basic concepts and principles of networking including types of network.
2. Determine organizational network needs.
3. Understand details and functionalities of layered network architecture.
4. Design network topologies.
5. Configure network devices including router and switches.
6. Install & configure wireless and wired networks.
7. Configure and deploy network services.

Unit – 1 Introduction (10 hrs)

- Network concepts: What is network, Use of network
- Network model: peer to peer, client server
- Network Types: LAN, MAN, WAN
- Network Services: File service, Print service, Communication Service, Data base service, Security service, Application service

Unit – 2 Basics of Networking (10 hrs)

- Network Access Methods: CSMA / CD & CSMA / CA, Token passing, Polling
- Network Topologies : Bus, Ring, Star, Mesh, Tree, Hybrid
- Advanced Network Topologies: Ethernet, CDDI, FDDI
- Communication Methods: Unicasting, Multicasting, Broadcasting

Unit - 3 Network Models (10 hrs)

- OSI reference model with 7 layers
- TCP/IP network model with 4 layers

Unit - 4 Transmission Media and Switching concepts (10 hrs)

- Guided media
  - Co-axial cable, Twisted pair cable, Fiber optic cable
- Unguided media
  - Infrared, laser, microwave, Bluetooth
- Multiplexing and Demultiplexing
  - FDM,TDM
- Switching technology

  Circuit switching, Message switching, Packet switching

Unit - 5 Basic Network devices (10 hrs)

- Layer1 Devices**:** LAN Card, Modem, DSL & ADSL, Hub (Active, Passive, Smart Hub), Repeater
- Layer2 Devices**:** Switch (Manageable, Non Manageable), Bridge (Source Route, Transactional)
- Layer 3 Devices: Router, Layer 3 Switch, Brouter, Gateway

Text Books

1. *Glenn Berg* 1998, **MCSE: Networking Essentials**, [Second Edition], MCSE Training Guide: Networking Essentials, New Riders Publishing, Attn: Associate Publisher, Indianapolis IN.

Reference Books

1. *Behrouz A. Forouzan*, 2006, **Data Communications and Networking (SIE)**, McGraw Hill
2. *Andrew S. Tanenbaum*, 2002, **Computer Networks** [Fourth Edition], Pearson Publication

16UITCC08	Core Practical 3 : Advanced C and Data Structure	04 hrs/wk	02 Credits

- Practical of Data Structure using C Programming Language.

16UITCC09	Core Practical 4 : Web Designing	04 hrs/wk	02 Credits

- Practical of HTML, DHTML, CSS and JAVASCRIPT