SARVODAYA KELAVANI SAMAJ MANAGED,

SHREE MANIBHAI VIRANI & SMT. NAVALBEN VIRANI SCIENCE COLLEGE

AN AUTONOMOUS COLLEGE - AFFILIATED TO SAURASHTRA UNIVERSITY, RAJKOT

Re-accredited at the 'A' Level (CGPA 3.28) by NAAC
'STAR' College Scheme & Status by MST-DBT
A College with Potential for Excellence - CPE (Phase-II) by UGC
Accredited at the G-AAA Highest Grade 'A-1′ Level by KCG, Govt. of Gujarat
UGC-DDU KAUSHAL Kendra
GPCB-Government of Gujarat approved Environment Audit Centre

Board of Studies (BoS)

Department of Computer Science & Information Technology

COMPOSITION / AGENDA / NOTES / ATTENDANCE / MoM

Academic Year	Meeting Number	Date
2016-17	1	22/04/2016

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

BOARD OF STUDIES – COMPUTER SCIENCE & INFORMATION TECHNOLOGY

Date: 22.04.201 Time: 12:00 Noon Venue: Reading Room Central Library

MINUTES OF THE MEETING

AGENDA:

1. Regulations for
   a) UG Programmes
   b) PG Programmes
2. Scheme of Instruction and Examinations for all semesters
   a) UG Programmes
   b) Scheme of Instruction and Examinations for PG Programme for 1st & 2nd Semesters
3. Syllabi for 1st & 2nd semesters courses for
   a) UG Programmes
   b) PG Programmes
4. Any other agenda with permission of the Chair.

BoS Members:

S.No.	Name	Designation	Present/Absent
1.	(Dr.) Stavan Patel	Head of Department Chairperson	Present
2.	Dr. Kishor H. Atkotiya	Subject Expert, VC Nominee	Present
3.	(Dr.) Parag Shukla	Subject Expert, AC Nominee	Present
4.	Dr. Nilesh K. Padhariya	Subject Expert, AC Nominee	Present
5.	Mr. Kalpesh Padhariya	Industry Representative	Present
6.	Mr. Hitendra Donga	Faculty Member	Present
7.	Mrs. Nehal Dave	Faculty Member	Present
8.	Ms. Falguni Parasana	Faculty Member	Present
9.	(Dr.) Priyank Doshi	Faculty Member	Present
10.	Ms. Priti Sadariya	Faculty Member	Present
11.	Ms. Rupal Parekh	Faculty Member	Present
12.	Mr. Pradip Vanpariya	Faculty Member	Present
13.	Mr. Chirag Jagani	Faculty Member	Present

S.No.	Name	Designation	Present/Absent
14.	Mr. Amit Patel	Faculty Member	Present
15.	Mr. Jignesh Hirpara	Faculty Member	Present
16.	Mr. Pradip Vaishnav	Faculty Member	Present
17.	Ms. Kinjal Patel	Faculty Member	Absent
18.	Dr. Pratik Vanjara	Faculty Member	Present
19.	Mr. Haresh Khachariya	Faculty Member	Present
20.	Ms. Disha Ganatra	Faculty Member	Absent
21.	Ms. Miral Kothari	Faculty Member	Present
22.	Mr. Hiren Kavathiya	Faculty Member	Present
23.	Mr. Divyesh Gohel	Faculty Member	Present
24.	Ms. Shital M. Chaniyara	Faculty Member	Present
25.	Mr. Prakash P. Gujarati	Faculty Member	Absent
26.	Ms. Hetal Jagani	Faculty Member	Absent
27.	Ms. Varada Dave	Faculty Member	Present
28.	Ms. Ripal Ranpara	Alumni Representative	Present

The BoS in Computer Science & Information Technology met as indicated above, and discussed on the above Agenda.

All the members appreciated the material presented to them by the department with respect to the agenda. Sharing their expertise with proactive inputs, they deliberated on the agenda and unanimously resolved that Regulations, Scheme of Instruction and Examinations as appended are to be recommended to Academic Council for approval for students admitted from **AY 2016-2017 & onwards:**

1. The Regulations framed for the following Programmes.
   a. Bachelor of Computer Application (B.C.A.) – **Enclosure –I A**
   b. B.Sc. Information Technology - **Enclosure –I B**
   c. B.Voc. Applied Computer Technology – (Recommended to keep same as per UGC & SU approval) - **Enclosure - IC**
   d. M.Sc. Information Technology & Computer Application – **Enclosure –I D**

2. The conceptual framework framed for M.Sc. Information Technology & Computer Application for all semesters totally 96 credits.

3. The scheme of Instruction & Examinations framed for all semesters of the following Programmes.

   a. Bachelor of Computer Application (B.C.A.) **(All Semesters) - Enclosure – II A**
   b. B.Sc. Information Technology **(All Semesters) - Enclosure – II B**
   c. B.Voc. Applied Computer Technology **(All Semesters) -** (Recommended to keep same as per UGC & SU approval) **- Enclosure – I C**
   d. M.Sc. Information Technology & Computer Application **(1st & 2nd Semesters) - Enclosure – II D**

4. The Syllabi framed for the courses of the 1st & 2nd semesters of the following Programmes.

   a. Bachelor of Computer Application (B.C.A.) **- Enclosure – II A**
   b. B.Sc. Information Technology **- Enclosure – II B**
   c. B.Voc. Applied Computer Technology (Recommended to keep same as per UGC & SU approval) **- Enclosure – I C**
   d. M.Sc. Information Technology & Computer Application
      i. The board authorised the Chairperson to frame the syllabi for the 1st & 2nd Semesters courses and to obtain the consent of members in circulation. This would be completed before the Academic Council Meeting. This is because of the dynamic nature of the subject. **–Enclosure –II D**

5. The members unanimously resolved to authorize the Chairperson of the BoS to finalize the List of paper setters and examiners for courses of 1st & 2nd semesters of UG & PG programme. **– Enclosure - III**

S.No.	Name of Member	Signature
1.	(Dr.) Stavan Patel	
2.	Dr. Kishor H. Atkotiya	
3.	(Dr.) Parag Shukla	
4.	Dr. Nilesh K. Padhariya	
5.	Mr. Kalpesh Padhariya	
6.	Mr. Hitendra Donga	
7.	Mrs. Nehal Dave	
8.	Ms. Falguni Parasana	
9.	(Dr.) Priyank Doshi	
10.	Ms. Priti Sadariya	
11.	Ms. Rupal Parekh	
12.	Mr. Pradip Vanpariya	

S.No.	Name of Member	Signature
13.	Mr. Chirag Jagani	
14.	Mr. Amit Patel	
15.	Mr. Jignesh Hirpara	
16.	Mr. Pradip Vaishnav	
17.	Ms. Kinjal Patel	ABSENT
18.	Dr. Pratik Vanjara	
19.	Mr. Haresh Khachariya	
20.	Ms. Disha Ganatra	ABSENT
21.	Ms. Miral Kothari	
22.	Mr. Hiren Kavathiya	
23.	Mr. Divyesh Gohel	
24.	Ms. Shital M. Chaniyara	
25.	Mr. Prakash P. Gujarati	ABSENT
26.	Ms. Hetal Jagani	ABSENT
27.	Ms. Varada Dave	
28.	Ms. Ripal Ranpara	

Enclosure –I A

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

Department of Computer Science & Information Technology

BACHELOR OF COMPUTER APPLICATION (B.C.A.)

Regulations for Students Admitted From A.Y. 2016-2017 & Onwards

ELIGIBILITY

Candidate who has passed 02 years Higher Secondary Certificate (10+2) examination of any stream of Gujarat State or any other examination recognized as equivalent thereto with a good academic record, shall be eligible for admission, subject to such other conditions prescribed by the Saurashtra University and State Government from time to time. All admissions are provisional and subject to the approval of Saurashtra University.

DURATION OF THE PROGRAMME

The Programme shall extend over a period of three years comprising of six semesters with two semesters in one academic year. Each semester normally consists of 90 teaching days.

STRUCTURE OF THE PROGRAMME

The UG programme shall have a curriculum comprising theory and practical courses with a specified syllabus. The curriculum of the programme is a blend of theory courses and practical courses as Core, Discipline Specific Electives (DSE) and Generic Electives (GE). In addition, project, internship/training and personality development courses as Ability Enhancement Courses (AEC) and Skill Enhancement Courses (SEC) shall be offered.

The medium of instruction and examinations shall be English except for courses on languages other than English.

EVALUATION

The evaluation will generally comprise of Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) with percentage weightage as specified below, unless specified otherwise in the Scheme of Instruction and Examinations.

Theory Courses		***Practical Courses***	
Continuous Internal Evaluation (CIE)	30%	Continuous Internal Evaluation (CIE)	40%
Semester End Examination (SEE)	70%	Semester End Examination (SEE)	60%

For the purpose of computation of credits the following mechanism is adopted:

a) 1 hour instruction of Theory = 1 Credit
b) 1 hour instruction of Tutorial = 1 Credit
c) 2-3 hours instructions of Practical = 1 Credit

ISSUE OF MARKSHEET AND DEGREE CERTIFICATE

The college shall publish the result after evaluation and with the recommendations of Result Passing Board at the end of each semester. On approval/ratification of the results by the Academic Council, the candidate will be recommended to Saurashtra University for the award of the degree on completion of all the courses and components of the curriculum.

Enclosure –II A

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

Department of Computer Science & Information Technology
BACHELOR OF COMPUTER APPLICATION (B.C.A.)

OBJECTIVES OF THE PROGRAMME

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

- Demonstrating a substantial understanding of concepts in key areas of computer science and its applications
- Specify, design, develop, test and manage application software systems to meet the operational and business requirements of organizations.
- 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							
16UCACC01	**Core 1:** Problem Solving Methodology and Programming in C	5	3	30	70	100	5
16UCACC02	**Core 2:** Computer Fundamental and Basic Networking	4	3	30	70	100	4
16UCADA01	**DSE-Allied 1:** Mathematics and Statistics -I	4	3	30	70	100	4
16UCACC03	**Core Practical 1:** Programming in C Practical	4	2	20	30	50	2
16UCACC04	**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 -I	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							
16UCACC05	**Core 3:** Advanced C and Data Structure	4	3	30	70	100	4
16UCACC06	**Core 4:** Computer Organization and Architecture	4	3	30	70	100	4
16UCACC07	**Core 5:** Web Scripting Languages	4	3	30	70	100	4
16UCADA02	**DSE-Allied 2:** Mathematics and Statistics -2	4	3	30	70	100	4
16UCACC08	**Core Practical 3:** Advanced C and Data Structure Practical	4	2	20	30	50	2
16UCACC09	**Core Practical 4** Web Scripting Languages Practical	4	2	20	30	50	2
		27				**600**	**23**
Part - III							
	AECC-1 : Environmental Science	1	-	Remarks			2
16UVE02	**SEC 2:** Value Education -II	1	-	Remarks			1
		29					

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							
16UCACC10	**Core 6:** Object Oriented Programming with JAVA	4	3	30	70	100	4
16UCACC11	**Core 7:** RDBMS using Oracle	4	3	30	70	100	4
16UCACC12	**Core 8:** Operating System Concept with Unix/Linux	4	3	30	70	100	4
16UCADA03	**DSE Allied 3:** Web and M-Commerce Technologies	4	3	30	70	100	4
16UCACC13	**Core Practical 5:** Object Oriented Programming with JAVA Practical	4	3	40	60	100	2
16UCACC14	**Core Practical 6 :** RDBMS using Oracle Practical & 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							
16UCACC15	**Core 9:** Programming with C#.NET	4	3	30	70	100	4
16UCACC16	**Core 10:** Web Development using PHP	4	3	30	70	100	4
16UCACC17	**Core 11:** System Analysis & Design	4	3	30	70	100	4
16UCADA04	**DSE Allied 4:** User Interface and User Experience Practical	4	3	40	60	100	2
16UCACC18	**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
		27				**700**	**21**

Semester - V							
Course Code	**Course**	**Hrs. of Instruction/ week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - II							
16UCACC20	**Core 12:** Network Technology and Administration	4	3	30	70	100	4
16UCACC21	**Core 13:** Administration of SQL Server	4	3	30	70	100	4
16UCACC22	**Core 14:** Web services API-JSON/XML (self study)	1	2	15	35	50	4
16UCADC01 / 16UCADC02	**DSE Core 1:** Advanced JAVA Programming / Programming with ASP.NET	4	3	30	70	100	4
16UCACC23	**Core Practical 9:** Administration of SQL Server Practical	4	3	40	60	100	2
16UCADC03 / 16UCADC04	**DSE Core Practical 1:** Advanced JAVA Programming Practical / Programming with ASP.NET Practical	4	3	40	60	100	2
16UCACC24	**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							
16UCACC25	**Core 16:** Mobile Computing using Android	4	3	30	70	100	4
16UCACC26	**Core 17:** Software Testing and Project Management	4	3	30	70	100	4
16UCADC05 / 16UCADC06	**DSE Core 2:** MVC Design Pattern in PHP / MVC Design Pattern in .NET	4	3	30	70	100	4
16UCACC27	**Core Practical 10:** Mobile Computing using Android Practical	4	3	40	60	100	2
16UCADC07 / 16UCADC08	**DSE Core Practical 2:** MVC Design Pattern in PHP Practical / MVC Design Pattern in .NET Practical	4	3	40	60	100	2
16UCACC28	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	16UCACC01	Problem Solving Methodology and Programming in C
2.		16UCACC02	Computer Fundamental and Basic Networking
3.	II	16UCACC05	Advanced C and Data Structure
4.		16UCACC06	Computer Organization and Architecture
5.		16UCACC07	Web Scripting Languages
6.	III	16UCACC10	Object Oriented Programming with JAVA
7.		16UCACC11	RDBMS using Oracle
8.		16UCACC12	Operating System Concept with Unix/Linux
9.	IV	16UCACC15	Programming with C#.NET
10.		16UCACC16	Web Development using PHP
11.		16UCACC17	System Analysis & Design
12.	V	16UCACC20	Network Technology and Administration
13.		16UCACC21	Administration of SQL Server
14.		16UCACC22	Web services API- JSON/XML (self study)
15.		16UCACC24	Computer Based Test
16.	VI	16UCACC25	Mobile computing using Android
17.		16UCACC26	Software Testing and Project Management

CORE COURSES [Practical]

S. No	Semester	Course code	Course
1.	I	16UCACC03	Programming in C
2.		16UCACC04	PC Software
3.	II	16UCACC08	Advanced C and Data Structure
4.		16UCACC09	Web Scripting Languages
5.	III	16UCACC13	Object Oriented Programming with JAVA
6.		16UCACC14	RDBMS using Oracle and Operating System Concept with Unix/Linux
7.	IV	16UCACC18	Programming with C#.NET
8.		16UCACC19	Web Development using PHP
9.	V	16UCACC23	Administration of SQL Server
10.	VI	16UCACC27	Mobile Computing using Android

- **OTHER CORE COURSES**

S. No.	Semester	Course Code	Course
1	V-VI	16UCACC28	Project

- **DSE ALLIED COURSES [Theory]**

S. No.	Semester	Course code	Course
1.	I	16UCADA01	Mathematics and Statistics -1
2.	II	16UCADA02	Mathematics and Statistics -2
3.	III	16UCADA03	Web and M-Commerce Technologies

- **DSE ALLIED COURSES [Practical]**

S. No.	Semester	Course code	Course
4.	IV	16UCADA04	User Interface and User Experience

- **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	16UCADC01/	Advanced JAVA Programming/	16UCADC03 /	Advanced JAVA Programming Practical/
		16UCADC02	Programming with ASP.NET	16UCADC04	Programming with ASP.NET Practical
2.	VI	16UCADC05/	MVC Design Pattern in PHP/	16UCADC07 /	MVC Design Pattern in PHP Practical/
		16UCADC06	MVC Design Pattern in .NET	16UCADC08	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

Bachelor of Computer Application (B.C.A.)

SEMESTER - I

16UCACC01	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 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
- Memory allocation
- 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.

16UCACC02	Core 2: Computer Fundamental and Basic Networking	04 hrs/wk	04 Credits

Objectives:

To enable the students to

1. Understand the functions of a computer.
2. Identify types and characteristics of various generations of computers.
3. Identify types and characteristics of various peripherals including storage and I/O.
4. Understand various numbering system.
5. Understand the basic concepts and principles of networking.
6. Understand types of networks and topologies.

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**:**, Bit, Byte, Nibble, KB, MB, GB, TB, HB, Carry Bit, Parity Bit, Sign Bit
- 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 Introduction of Networking **(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
- Network Topologies: Bus, Ring, Star, Mesh, Tree, Hybrid

Unit - 5 Network Models **(10 hrs)**

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

Text Books:

1. *Pradeep K. Sinha*, 2002, **Foundations of Computing** [Third Edition] BPB Publications, New Delhi. (UNIT 1 to 3)
2. *Glenn Berg* , 1998, **MCSE: Networking Essentials**, [Second Edition]. MCSE Training Guide: Networking Essentials, New Riders Publishing, Attn: Associate Publisher, Indianapolis IN. (UNIT 4 to 5)

Reference Books:

1. *A. Jaiswal*, 2003, **Fundamentals of Computer and Information Technology,** Dreamtech Press
2. *Andrew S. Tanenbaum*, 2002, **Computer Networks** [Fourth Edition], Pearson Publication

16UCACC03	Core Practical 1 : Programming in C	04 hrs/wk	02 Credits

- Practical based on C Programming Language.

16UCACC04	Core Practical 2 : PC Software	04 hrs/wk	02 Credits

- Practical of Word Processing, Spreadsheet and Presentation tools.

SEMESTER – II

16UCACC05	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.

16UCACC06	Core 4: Computer Organization and Architecture	04 hrs/wk	04 Credits

Objectives:

To enable the students to

1. Understand the basic structure and operation of a digital computer.
2. Understand different digital components of integrated circuit.
3. Implementation of fixed-point and floating-point addition, subtraction, multiplication & division.
4. Understand the major components of a computer including CPU, memory, I/O and storage.
5. Understand stack implementation by register stack and memory stack and working method of DMA.

Unit - 1 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, Simplified Boolean function using karnaugh map (K-map) method and discus DON'T CARE condition.

Unit - 2 Sequential and Combinational Circuits (10 hrs)

- 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 - 3 Digital Component (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.
- Multiplication and division of two binary numbers, floating point representation, fixed point representation. Error Detection code – (Parity Bit)

Unit - 4 Central Processing Unit (10 hrs)

- 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
- Interrupts: What is interruption, How it useful and work.

Unit - 5 Input-Output Organization (10 hrs)

- Memory buses: Explain with block diagram, How it works, Data Bus, Address Bus and Control lines, Input Output Buses
- Concept of Input Output Interface, Input Output Processor (IOP)
- Introduction to Direct Memory Access: How DMA works, Explain DMA controller, How DMA transfer data in computer system.

Text Books

1. *M. Morris mano,* 2007, **Computer System Architecture** [Third Edition]. PEARSON Education India, New Delhi. (UNIT 1 to 5)

Reference Books

1. *M. Morris mano,* 2004, **Digital Logic and Computer Design** [Second Edition], PEARSON Education India, New Delhi.
2. *A. Anand Kumar,* 2003, **Fundamentals of Digital Circuits** [Third Edition], PEARSON Education India, New Delhi.
3. *Albert paul Malvino, Ph.D. Jerald A. Brown,* 1992, **Digital Computer Electronics** [Third Edition], Tata McGraw-Hill Publishing Company Limited, New Delhi.

16UCACC07	Core 5 : Web Scripting Languages	04 hrs/wk	04 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 (09 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 (09 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 (09 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 (12 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 (09 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

16UCACC08	**Core Practical 3 : Advanced C and Data Structure**	**04 hrs/wk**	**02 Credits**

- Practical of Data Structure using C Programming Language.

16UCACC09	**Core Practical 5 : Web Scripting Languages**	**04 hrs/wk**	**02 Credits**

- Practical of HTML, DHTML, CSS and JAVASCRIPT

Enclosure –I 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
Regulations for Students Admitted From A.Y. 2016-2017 & Onwards

ELIGIBILITY

Candidate who has passed 02 years Higher Secondary Certificate (10+2) examination with Mathematics/Business Mathematics/Statistics/Computer/Physics of any stream of Gujarat State or any other examination recognized as equivalent thereto with a good academic record, shall be eligible for admission, subject to such other conditions prescribed by the Saurashtra University and State Government from time to time. All admissions are provisional and subject to the approval of Saurashtra University.

DURATION OF THE PROGRAMME

The Programme shall extend over a period of three years comprising of six semesters with two semesters in one academic year. Each semester normally consists of 90 teaching days.

STRUCTURE OF THE PROGRAMME

The UG programme shall have a curriculum comprising theory and practical courses with a specified syllabus. The curriculum of the programme is a blend of theory courses and practical courses as Core, Discipline Specific Electives (DSE) and Generic Electives (GE). In addition, project and personality development courses as Ability Enhancement Courses (AEC) and Skill Enhancement Courses (SEC) shall be offered.

The medium of instruction and examinations shall be English except for courses on languages other than English.

EVALUATION

The evaluation will generally comprise of Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) with percentage weightage as specified below, unless specified otherwise in the Scheme of Instruction and Examinations.

Theory Subjects		***Practical Subjects***	
Continuous Internal Evaluation (CIE)	30%	Continuous Internal Evaluation (CIE)	40%
Semester End Examination (SEE)	70%	Semester End Examination (SEE)	60%

For the purpose of computation of credits the following mechanism is adopted:

a) 1 hour instruction of Theory = 1 Credit
b) 1 hour instruction of Tutorial = 1 Credit
c) 2-3 hours instructions of Practical = 1 Credit

ISSUE OF MARKSHEET AND DEGREE CERTIFICATE

The college shall publish the result after evaluation and with the recommendations of Result Passing Board at the end of each semester. On approval/ratification of the results by the Academic Council, the candidate will be recommended to Saurashtra University for the award of the degree on completion of all the courses and components of the curriculum.

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

SAURASHTRA UNIVERSITY

RAJKOT – INDIA

Re-Accredited
Grade B by NAAC
(CGPA 2.93)

CURRICULAM FOR

UGC - B.Voc. under National Skills Qualification Framework(NSQF)

Bachelor of Vocational – Applied Computer Technology

(B.Voc.- ACTech.)

(Sanctioned to Shree Manibhai Virani & Smt. Navalben Virani Science College-Rajkot)

(Semester I and Semester II)

Effective From June – 2014

Ordinance, Regulations and Examination Scheme :

O.S. B.Voc.-ACTech. – 1 :

Candidate for admission to the Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) must have passed standard 12th or equivalent examination from Gujarat higher secondary board or any other board.

Lateral Entry : Candidate seeking admission directly in third semester of Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) must have passed Examination of either Diploma in Engineering in Computer Engineering(CE) / Computer Science(CS) / Information Technology(IT) OR B.C.A./B.Sc.I.T. first year from any recognized university.

O.S. B.Voc.-ACTech. – 2 :
The duration of the course will be of three full time academic years. The examination for the Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) course will be divided into six semesters.
Multi-level Exit : Candidate will be eligible to receive Diploma after first 2 semesters and Advance Diploma after 4 semesters according to guidelines of UGC. No candidate will be allowed to join any other course or service simultaneously.

O.S. B.Voc.-ACTech. – 3 :
Candidate who have passed an equivalent examination from any other board or examining body and is seeking admission to the Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) course will be required to provide necessary eligibility certificate.

O.S. B.Voc.-ACTech. – 4 :
No candidate will be admitted to any semester examination for Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) unless a student has put on at least 85% of the total lecture periods and practical periods in each subject in each semester.

O.S. B.Voc.-ACTech. – 5 :
No candidate will be permitted to reappear at any semester examination, which he has already passed. The marks of successfully completed paper will be carrying forwarded for the award of class.

O.S. B.Voc.-ACTech. – 6 :
There shall be an examination at the end of each semester to be known as Pre Diploma (first semester) examination, Diploma (second semester) examination, Pre Advanced Diploma (third semester) examination, Advanced Diploma (forth semester) examination, Pre B.Voc. Degree (fifth semester) examination and B.Voc. Degree (sixth semester) examination. At which a student shall appear in that portion of theory papers, practical and viva – voice if any, for which he has kept the semester in accordance with the regulations in this behalf.

A candidate whose term is not granted for what so ever reason shall be required to keep attendance for that semester or term when the relevant papers are actually taken at the college.

O.S. B.Voc.-ACTech. – 7 :

Guidelines to keep term of B.Voc. ACTech.;

A candidate will be permitted to continue his/her study up to the 4th semester examination without passing his/her previous semester examination.

A candidate can take admission to fifth (pen-ultimate) semester if he/she is failing in NOT more then two subjects of previous (1 to 4) semesters.

A candidate can take admission to Sixth (Ultimate Final) Semester if he/she is not failing in more then two subjects of 5th Semester. Provided he/she should have cleared all 1 to 4 semester.

R.S.B.Voc.-ACTech.

Standard of Passing

The standard of passing for Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) degree examination will be as under :

1) To pass any semester examination of the Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) degree, a candidate must obtain at least 40% marks in the university examination separately in each course of theory and practical.

2) Total marks of each theory paper are 100 (External examination 70 marks + Internal examination 30 marks)

3) Total marks of each practical and project-viva paper are 100. No internal examination marks in practical and project-viva papers.

4) Those of the successful candidates who obtain 50% or more marks in the aggregate of all the semester taken together will be placed in the **second class** and those who obtain 60% or more marks in the aggregate of all the semester taken together will be placed in the **first class**. The successful candidates who obtain 70% or more marks in the aggregate of all the semester taken together will be declared to have passed the examination in the **first class with distinction.**

5) A result of candidate who have obtained admission directly in Bachelor of Vocational – Applied Computer Technology (B.Voc.-ACTech.) semester – III will be declared by considering his marks of semester III to VI in aggregate and accordingly class will be awarded as per normal percentage of marks fixed for other candidate.

UGC B.Voc.- Applied Computer Technology (Semester – I)

Sr. No.	Paper No.	Subject Name	Credit
1	1.1	Editorial Communication Skill	5
2	1.2	Building logic using C Language	5
3	1.3	Foundation of Speed Mathematics and Statistics	5
4	1.4	Fundamental of Computer (PC Software - MS Office & DOS)	5
5	1.5	Practical - I (Based on 1.2)	5
6	1.6	Practical - II (Based on 1.4)	5
Total Credits of Semester - I			**30**

1.1 : Editorial Communication Skill				
Sr. No.	**Topic**	**Detail**	**Marks**	**Min. Lect.**
1	**Grammar**	1. Determiners 2. Tenses • Defining a Verb • Chief forms of a Verb • Tense and Time • Further Division of Tenses o The Present Tense o The Past Tense o The Future Tense 3. Active – Passive Voice • Introduction • Defining the Voice • Some General rules regarding the change of voice 4. Modals & Auxiliaries • Introduction to Auxiliaries • The Primary Auxiliaries • Introduction to Modals • The Most Commonly used Modals • Important points about the Modals • Modals and Their Uses 5. Prepositions / Prepositional Phrases	**20**	**10**
2	**Writing Comprehension**	**1. Business Letters :** • Introduction • Functions of a Business Letter • Inward Structure / Layout of a Business Letter • Other Important Parts of Business Letter • Outward appearance of a business letter • Arrangement Styles • Salient Features of a Business Letter • Legal Aspects of a business Letters • Kinds of Business Letter Inquiry & Reply Order & Reply Cancellation of order Complaint / Adjustment Sales Letter **2. Report Writing :** • Introduction • The Nature of a Report • The P's of an Effective Report • Functions of a Report • Preparing a Report • Types of Reports • Business report	**28**	**20**

		• Press report **3. Job Application / Resume Writing.** • Introduction • A Cover Letter • Curriculum Vitae / Resume **4. Letters of Appointment & Resignation.**		
3	**Conversation Skills**	Conversations based on everyday situation / Dialogue Writing. • Introduction • Nature of Conversations • Purpose of conversation • Guidelines for Effective Conversation Skills • Proverbs used in Everyday Conversation with their Meanings / Explanations • Comparisons used in Everyday Conversation • Practical Conversations	**14**	**10**
4	**Communication Skills**	(1) Communication – Meaning, Features & Process (2) Verbal & Non – Verbal comm. Verbal Oral Communication Written Communication Non – Verbal Body language Space Para language Others (3) Group discussion skills • Meaning • Characteristic • Do's & Don'ts • Relevance • Moderating a group discussion (4) Presentation skills • Meaning • Planning a presentation skills • Preparing a presentation skills • Delivering a presentation skills • Presentation skills (5) Public Speaking • Meaning • Essential of effective public speaking (6) Facing Interviews • Importance • Do's & Don'ts	**38**	**20**
Total			**100**	**60**

Students seminar	- 5 Lectures.
Expert Talk	- 5 Lectures
Students Test	- 5 Lectures.

Total Lectures **60 + 15 = 75**

Reference Book

1. High School English Grammar and Composition By Wren & Martin
2. Communication Skills by Bharat & Company

1.2 : Building Logic using C Language				
No.	**Topics**	**Details**	**Marks**	**Min. Lec.**
1	Pre Programming Techniques	Importance of preprogramming techniques Pre programming tools Algorithm Flow charts Dry Run (preparation of sample data set for testing of logic) Writing algorithms and development of flowcharts with dry run for the given list of problems	10	6
2	Getting started with C	C program structure C Character sets Constants, Variables and Keywords in C Various Data Types Type Casting Various Operators Hierarchy of Operations	90	6
3	Various Controls Structures	Decision if, if-else,Nested if-else, if-elseif Conditional (Ternary) operator Switch Case Loops for, while, do while, Nesting of loops Use of break an continue statements, goto with lable		14
4	Header files & Library Functions	Importance of header files 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(),log(),ceil(),floor(),pow(), fmod(),fabs() <string.h>: strlen(),strcpy(),strcmp(),strcat(),strlwr(), strupr(),strrev() <ctype.h>: isalpha(),isdigit(),isalnum(),isspace(),isupper(), islower(),isprint(),toupper(),tolower()		5

5	User defined functions	Different type of UDF 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 Call by reference & Call by value Recursion Creation of your library Storage classes & scope of variables		5
6	Arrays	Concept of Single & Two dimensional arrays Initializations & working with array Passing array elements to function Sorting of numeric & string array String operations		6
7	Structures	How to define a structure Accessing structure elements Memory allocation Array of structure Array within structure Structures as a function argument Union		5
8	Pointer	Introduction of Pointers Pointer to Variables Pointer to Array Pointer within Array Pointer To Structure Pointers within structure Pointer to Pointer Use of pointers in Dynamic Programming Memory Allocation Functions malloc , realloc , calloc, free		6
9	Data file handling	Concept of data file and file structure Text file and binary file Opening and closing of data file (fopen(),fclose()) Write data/ Record to data file (fprint(),fwirte(),fputs()) Reading from data file (fscanf(),fread(),fgets()) File handling functions(feof(),ferror(),fseek(), ftell(),rewind()) Command line arguments		5
10	Misc.	Typedef Symbolic Constants C Preprocessor #define, #include		2
Total			**100**	**60**

Student Seminar	– 5 Lectures
Expert Talk	– 5 Lectures
Student Test	– 5 Lectures
Total Lectures	**60 + 15 = 75**

Reference Books:

1. Programming in ANSI C	E.Balaguruswami
2. Let Us C	Yashwant Kanetkar
3. Working with C	Yashwant Kanetkar
4. Programming in C	Schaum Series Publication

1.3 : Foundation of Speed Mathematics and Statistics				
Sr. No.	**Topic**	**Detail**	**Mark**	**Lectures**
1.	Set Theory	➢ Introduction ➢ Methods of Representation of a Set ➢ Different Types of Sets ➢ Operations on Set and its Properties • Union of Sets • Intersection of Sets • Complement of Sets • Difference of Sets ➢ Cartesian Product of Sets ➢ Typical Examples	20	12
2.	Matrix	➢ Introduction ➢ Different Types of Matrices ➢ Addition and Subtraction of two Matrices ➢ Multiplication of two Matrices ➢ Adjoint of Matrix ➢ Determinant of Matrix ➢ Inverse of Matrix ➢ Typical Examples	20	12
3.	Co-ordinate Geometry	➢ Introduction ➢ Distance between two Points in R_2 ➢ Section Formula ➢ Area of Triangle ➢ Different Types of Equations of Lines ➢ Parallel Lines ➢ Perpendicular Lines ➢ Typical Examples	20	12
4.	Number System	➢ Types of Number System [Binary / Octal / Decimal / Hexadecimal] ➢ Conversions • Decimal to Binary / Octal / Hexadecimal • Binary to Decimal / Octal / Hexadecimal • Octal to Binary / Decimal / Hexadecimal • Hexadecimal to Binary / Octal / Decimal ➢ Complement	20	12

		• 1's Complement • 2's Complement ➢ Addition of Two Binary Numbers ➢ Subtraction of Two Binary Numbers Using 1's & 2's Complement		
5	Mind Techniques	➢ Positive Affirmations ➢ Creative Visualization ➢ Memory Techniques ➢ Visualization Techniques ➢ Meditation ➢ Observation ➢ Concentration ➢ Mind Relaxation ➢ Determination ➢ Mind Control	20	12
Total			**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures 60 + 15 = 75

Reference Books:

1. Theory of Matrices by Shantinarayan
2. Co-ordinate Geometry by A. K. Sharma
3. Basic Set Theory by Azriel Levy
4. Set Theory an Introduction by Robert L. Vaught
5. Computer Fundamentals – By P. K. Sinha.
6. Secretes of mind power by Harry lorayne
7. The essence of law of success by napoleon Hill

1.4 : Fundamental of Computer (PC Software - MS Office & DOS)

Unit	Topic	Detail	Marks	Min Lec.
1	Basics & Booting Procedure	Introduction to Computers, Characteristics, Data Processing Cycle History and Generations of Computers Classification of Computer by Processing Capabilities Micro, Mini, Mainframe and Super Computers Block diagram of computer, Layered Approach of Operating System, booting process Types of Operating Systems, Introduction to BIOS and CMOS What is software? Types of Software Types of Languages (Assembler / Compiler /Interpreter) Machine Level Language, Assembly Level Language	20	12
2	Hardware & Peripherals	What is hardware? Types of Input Devices, Output Device, Peripherals Types of Memory, Internal, External	10	6
3	Computer Assembly, Installation & Trouble Shooting	Identification of Components Assembling computer Operating System & Software Installation, Security Configuration of Printer and other Multimedia Devices , Updating Software, Hardware problems and their solutions Use of Multi-meter, soldering, line tester, etc	20	12
4	Word Processing Using Ms Word	Introduction to Word, Font, Paragraph, Style, Editing ,Pages, tables. Illustrations, bookmark, hyperlink, header footer, text, symbol , Page layout ribbon, Foot note End note, Caption, Mail merge, Spell check, comments, Document View, Show Hide, Zoom, Window and Office Button Options, Printing documents. Password Protection.	15	9
5	Spread Sheet Using Ms Excel	Sheet Introduction, Selecting row, column, cell, changing height, and Formula bar. Cell Referencing - Relative, Absolute, Mixed, Calculative Examples like salary sheet, mark sheet etc. Conditional formatting, inserting, deleting row or column, cell Changing height and width, Pivot table and Pivot chart, types of different chart, editing charts. What if Analysis.	25	15

		Print Preview and Page Layout, Useful functions from Function Library. Data sorting and subtotaling, filter, Protecting sheet.		
6	Presentation Using Ms Power Point	Inserting new slide, different layout of slide, Inserting date, slide number, movie, sound, object, header footer, Designing slide theme and background, custom animation, slide transition Rehearse timings, slide show , Setup slide show, hide slide, different views of slide Use of slide master, Printing handout, slide, etc	10	6
Total			**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. Pc Software For Windows Made Simple - R.K. Taxali
2. Introduction To Information Technology - V.Rajaraman
3. Computer Fundamentals – By P.K.Sinha.
3. Ibm Pc And Clones: Hardware, Troubleshooting And Maintenance - Govindarajalu

1.5 : Practical – I (Based on 1.2)	
Topics	**Marks**
1.2	**100**

1.6 : Practical – II (Based on 1.4)	
Topics	**Marks**
1.4	**100**

Bachelor of Vocational – Applied Computer Technology (Semester – I & II)
Saurashtra University
Effective from June - 2014

UGC B.Voc.- Applied Computer Technology (Semester – II)

Sr. No.	Paper No.	Subject	Credit
1	2.1	Web Designing & Internet (HTML ,CSS, JavaScript)	5
2	2.2	Fundamental of Networking	5
3	2.3	Object Oriented Programming using C++	5
4	2.4	Desk Top Publishing (Photoshop & Corel Draw)	5
5	2.5	Practical - I (Based on 2.1)	5
6	2.6	Practical - II (Based on 2.3 & 2.4)	5
Total Credits of Semester - II			**30**

2.1 : Web Designing & Internet (HTML ,CSS, JavaScript)				
Sr. no	**Topics**	**Details**	**Marks**	**Min Lec.**
1	Internet	➢ Introduction to Internet • What is Internet? • Use of Internet? ➢ Applications of Internet • World wide web(web page, web site, web client and web server) • Web browsers • Search engines • Email • Blogs and forums • Social media and chatting • E-commerce • FTP • Bookmarks ➢ Internet Search • Basic search • Tips and Tricks for search ➢ How to stay safe on internet? ➢ How to download and upload? ➢ IP addressing	20	10
2	HTML	➢ Introduction ➢ HTML Block Structure ➢ Basic tags: • Texts formatting tags • Line breaks • Link • Color • Image • List creation • Table • Frame • Form ➢ HTML multimedia • HTML Plug-in • HTML Audio • HTML Video ➢ Introduction to HTML 5	25	20

3		➢ Basics of CSS ➢ Types of CSS ➢ Selectors of CSS (class and id) ➢ Properties: • Background property • Text property • Font property • Table property • Box modal property • Border property • Margin property • Padding property • Align property • Image property ➢ Page layouts • Using DIV and SPAN tag ➢ Introduction to DHTML	20	12
4	Javascript	➢ Introduction to Scripting Language ➢ JS syntax ➢ JS variables ➢ JS Operators ➢ JS control structures • Control statements • Looping statements • Sequential statements ➢ JS Dialog boxes ➢ User defined functions ➢ Built-in objects and properties • Number object • Date object • Math object • String object • Array object • History object • Navigator object ➢ User defined objects ➢ Built-in functions ➢ JS Events ➢ JS Timing Events ➢ JS DOM (Methods and property) ➢ Cookies ➢ JS Errors (throw and try catch block)	35	18
Total			**100**	**60**

Student Seminar	– 5 Lectures
Expert Talk	– 5 Lectures
Student Test	– 5 Lectures
Total Lectures	**60 + 15 = 75**

Reference Books:

1. Beginning Web Programming with HTML, XHTML, and CSS by Jon Duckett Wrox Publication.
2. Beginning JavaScript by Paul Wilton Wrox Publication.
3. Practical HTML 4.0 by Lee Philips
4. World wide web design with HTML by Cxavier
5. Internet The Complete Reference –Young
6. Internet For Every One -Leon
7. http://www.w3schools.com

2.2 : Fundamentals of Networking				
Sr. No.	**Topics**	**Details**	**Marks**	**Min Lec.**
1.	Introduction of Networking	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 • Comm. service • Data base service • Security service, • Application service Client Server Configuration	10	5
2.	Basics of Networking	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	10	5

3.	Network Models	OSI reference model with 7 layers TCP/IP network model with 4 layers	10	5
4.	Transmission Media	Transmission Media Types of Transmission media • Guided media o Coaxial Cable, o Twisted Pair Cable, o Crimping of Twisted pair cable o Fiber Optic Cable • Unguided media o Infrared, Laser, Radio o Microwave o Bluetooth tech.	10	6
5.	Multiplexing & Switching Concepts	Different Frequency Ranges Multiplexing & Demultiplexing Multiplexing Types • FDM • TDM • CDM • WDM Switching Tech. • Circuit Switching • Message Switching • Packet Switching	5	4
6.	Network Devices	CABLE NETWORK DEVICES LAYER1 DEVICES • LAN CARD • MODEM • DSL & ADSL • HUB(Active, Passive, Smart hub) • REPEATER LAYER 2 DEVICES • SWITCH(Manageable, Nonmanagable) • BRIDGE(Source route, Transactional) LAYER 3 DEVICES • ROUTER • LAYER 3 SWITCH • BROUTER • GATEWAY • Network Printer Establishment of network, use of Cable and Connector Crimping Switch & Hub Configuration	15	9

7.	Network Protocols	Layer 1 Protocols • USB • DSL Layer 2 Protocols • PPP Layer 3 Protocols • ARP • RARP • IP • EGP • IGRP • IGMP • ICMP • IPX • RIP • OSPF Layer 4 Protocols • TCP • UDP • SPX Layer 7 Protocols • DHCP • BGP • DNS • FTP • HTTP & HTTPS • SMTP • POP3 & IMAP • IRC • SNMP	20	14
8.	IP Addressing	What is IP address? Classes of IP Address Types of IP address IPv4 • Class structure • Subneting • Supernetting • CIDR IPv6 • Basic structure of ipv6 • Implementation of ipv6	10	6

9.	Internet connection & Sharing	Internet Terminology ISP Intranet & Extranet Technology related Internet • Dial up tech. • ISDN network tech. • Lease line tech. VPN • Types of VPN • Use of VPN • VPN protocols (PPTP, L2TP, IPsec.) Proxy server, Firewall	10	6
Total			**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. 1 Networking Essential by Glenn Berg Tech. Media
2. Data Communication & Networking – B A Forouzan
3. http://compnetworking.about.com/
4. http://searchnetworking.techtarget.com/

2.3 : Object Oriented Programming using C++				
Sr. No	**Topics**	**Details**	**Marks**	**Min Lec.**
1	Principles of object oriented programming	Procedure – oriented programming Object oriented programming paradigm Basic concepts of object oriented Programming Benefits of object oriented programming Application of object oriented programming What is c++? Application of c++ Input/output operators Structure of c++ program	5	4
2	Tokens, expressions and control statements	Tokens : keywords, identifiers, basic data types, user defined types, derived data types, symbolic constants, type compatibility, declaration of variables, dynamic initialization of variables, reference variables. Operators in C++: Scope resolution operator, member referencing operator, memory management operator, manipulators, type cast operator. Expression : Expression and their types, special assignment operator, implicit conversions, operator precedence Control structures Conditional control structure:- simple if, if…else , nested if else, switch etc. Looping control structure:- for, while , do…while	10	7
3	Functions in C++	The main function Function prototype Call by reference Return by reference Inline function Default arguments Const arguments Functions overloading	10	6
4	Classes and Objects	C structures revisited Specifying a class Defining member functions nesting of Member functions	15	10

		private member function making outside function inline Arrays within a class Memory allocation for objects Static data member Static member functions Arrays of objects Objects as function arguments Friendly functions Returning objects Const member function Pointer to members		
5	Constructor and Destructor	Characteristics of constructor Parameterized constructor Multiple constructor in a class Constructor with default argument Copy constructor Dynamic initialization of objects Constructing two dimensional array Dynamic constructor Destructors	10	5
6	Operator overloading and type conversion	Concept of operator overloading Over loading unary and binary operators Overloading of operators using friend Function Manipulation of string using operators Rules for operator overloading Type conversions.	10	6
7	Inheritance	Defining derived classes Types of inheritance (Single, Multiple, Multi-level, Hierarchical, Hybrid) Virtual base class & Abstract class Constructors in derived class Nesting of classes.	10	5
8	Pointer, Virtual functions and Polymorphism	Pointer to Object Pointer to derived class this pointer Rules for virtual function Virtual function and pure virtual function	10	5
9	Console I/O operations	C++ streams C++ stream classes Unformatted and formatted I/O operations Use of manipulators.	5	3
10	Working with Files	File stream classes Opening and closing a file Error handling	10	5

		File modes File pointers Sequential I/O operations Updating a file (Random access) Command line arguments		
11	Templates and Exception handling	Introduction to templates Class templates Function templates Member function templates Overloading of template function Non-type Template argument	5	4
			100	60

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. Object Oriented Programming in C++ E.Balaguruswami, BPB
2. Mastering C++ Venugopal
3. Object Oriented Programming in C++ Robaret Laphore
4. Let us C++ Yashvant Kanitkar, BPB

2.4 : Desk Top Publishing (Photoshop & Corel Draw)				
Sr. No.	**Topic**	**Detail**	**Marks**	**Min Lec**
1	CorelDRAW Basics And Interface	Exploring the CorelDraw Screen, File Management, Moving Around and Viewing Drawings, Customizing Options, Setting File Backups	5	4
2	Objects- Creation and Manipulation Drawing and Shaping Objects	Drawing and Shaping Tools, Lines, Polylines, Curves, Rectangles, Circles, Selecting & Manipulating Objects, Transforming Objects, Outlining & Filling Objects, Arranging Objects, Using Layers	10	5
3	Working With Special Effects And Texts Special Effects	Drawing With the Artistic Media Tool, Shaping an Object with an Envelope, Working with Text, Working With Paragraph, Special Text Effects, Using Symbols and Clipart, Working With Bitmaps	15	8
4	Advanced Features Special Page Layouts	Page Exporting, Printing, Exporting Drawings, Using Styles and Templates, Custom Creation Tools, Using Corel Trace, Using Corel R.A.V.E.	15	10
5	Introduction to Photoshop	About Adobe Photoshop , Graphics Basics, Exploring Menus & Panels, Customizing Workspaces, Different file formats, Work area Using Rulers and Guides, Introduction to Colour	5	3

6	Image Manipulation & Painting tools	The Photoshop Toolbox and Options bar Inserting Pictures and texts Cropping Images Image Magnification Resizing Images Adjusting Resolution Transforms Using Free transform, Move, Rotate, Scale, Skew Distort, Perspective, Flip-vertical, horizontal, Invert, Rotate 180º, Rotate 90º CW, Rotate 90º CCW Bitmap Images v/s Vector Images Making Selections & Using Pen tool Using Painting tools (Brush, Pencil, Paint Bucket, Gradient , Eraser, etc..) Undoing and History Palette	12	6
7	Working with Layers	Creating layers and Group layer, Layer Styles and Locking, Merging and Flattening Layers, Adjustment Layers and Fill Layers, Masking Layers (Blending Mode), Photoshop Channels	5	5
8	Image Post Production (Image Processing)	Color Management, Levels & Curves, Using Retouching tools Spot Healing Brush, Clone Stamp, Pattern Stamp, Red Eye, Eraser, Blur, Sharpen, Smudge, Dodge, Burn, Sponge Blurring and Sharpening Images, Color Replacement Tool, The Free Transform command	5	4
9	Working with Filters	Getting started with Photoshop Filters, Liquify Command, Exploring filters Blur, Distort, Noise, Pixelate, Render, Sharpen, Stylize Smart Filters,	8	5

		Lens Correction		
10	Scripting	1. Action • Using the Action palette, Droplet • Recording, Playing, Editing Action 2. Adobe ImageReady • The Image Ready Interface • Image Maps • Image Slicing	20	10
Total			**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. Adobe Photoshop Classroom in a Book [CS]
2. http://www.photoshop.com

2.5 : Practical – I (Based on 2.1)	
Topics	**Marks**
2.1	**100**

2.6 : Practical – II (Based on 2.3 & 2.4)	
Topics	**Marks**
2.3	**50**
2.4	**50**

UGC Bachelor of Vocational (Applied Computer Technology)

Semester – III

Sr. No.	Subject	Credit
3.1	Core Java	5
3.2	Web Development using PHP/MYSQL	5
3.3	RDBMS using MS SQL Server	5
3.4	Basic Animation using Flash	5
3.5	Practical - I (Based on 3.1 & 3.4)	5
3.6	Practical - II (Based on 3.2 & 3.3)	5
Total Credits of Semester - III		**30**

Semester - IV

Sr. No.	Subject	Credit
4.1	Value Education	5
4.2	Advance PHP (OOP, CMS, Wordpress)	5
4.3	Advance Web Designing (JQuery, CSS framework, AJAX, Responsive Layout)	5
4.4	Project Work - I	5
4.5	Practical - I (Based on 4.2)	5
4.6	Practical - II (Based on 4.3)	5
Total Credits of Semester - IV		**30**

Semester – V

Sr. No.	Subject	Credit
5.1	Business Etiquettes & Interview Techniques	5
5.2	Programming with C#.NET	5
5.3	Mobile Computing with Android	5
5.4	Project Work - II	5
5.5	Practical - I (Based on 5.2)	5
5.6	Practical - II (Based on 5.3)	5
Total Credits of Semester - V		**30**

Semester – VI

Sr. No.	Subject	Credit
6.1	Graphics and Multimedia	5
6.2	Web Programming with ASP.NET	5
6.3	Mobile Computing with IOS	5
6.4	Project Work - III	5
6.5	Practical - I (Based on 6.1 & 6.3)	5
6.6	Practical - II (Based on 6.2)	5
Total Credits of Semester - VI		**30**

SAURASHTRA UNIVERSITY

RAJKOT – INDIA

Re-Accredited
Grade B by NAAC
(CGPA 2.93)

CURRICULAM FOR

UGC - B.Voc. under National Skills Qualification Framework(NSQF)

Bachelor of Vocation – Applied Computer Technology

(B.Voc.- ACTech.)

(Sanctioned to Shree Manibhai Virani & Smt. Navalben Virani Science College-Rajkot)

(Semester III and Semester IV)

Effective From June – 2015

Bachelor of Vocation – Applied Computer Technology (Semester – III & IV)
Saurashtra University
Effective from June - 2015

UGC B.Voc.- Applied Computer Technology (Semester – III)

Sr. No.	Paper No.	Subject	Credit
1	ACTECH 3.1	Core Java	5
2	ACTECH 3.2	Web Development using PHP/MYSQL	5
3	ACTECH 3.3	RDBMS using MS SQL Server	5
4	ACTECH 3.4	Basic Animation using Flash	5
5	ACTECH 3.5	Practical - I (Based on 3.1 & 3.4)	5
6	ACTECH 3.6	Practical - II (Based on 3.2 & 3.3)	5
Total Credits of Semester - III			**30**

ACTECH 3.1 : Core Java				
Sr. No.	**Topics**	**Details**	**Marks**	**Lec.**
1	Introduction and Basic	History of Java Basic concepts of OOP Java Features/Buzzword of Java JDK and its components Byte code and JVM Java Tokens Data Types Type Conversion and type casting Garbage Collection Array (One Dimensional, Rectangular and Jagged Array) Conditional Statements (if, switch) Looping Statement (while, for, do-while) Command Line Arguments	10	5
2	Classes and Objects	Defining a class Creating Objects Concept of Constructor Overloading of methods and constructors Static members Finalize() method Nested class Access specifiers : public, private and protected Modifiers : final, abstract, static, synchronized, native, volatile, transient	10	5
3	Inheritance	Types of Inheritance (Single, Multilevel, Hierarchical) Constructor in inheritance (super and this keyword) Method Overriding Abstract method and class Final keyword (Final variable, method and class) Defining Interface Implementing and extending interface	5	5
4	Java Packages	Introduction of Java API User defined package (Creating and using package) System defined packages : Java.lang Java.util Java.io Java.net Java.applet	10	10

		Java.awt Java.awt.event Javax.swing Java.lang (Object, Math, String, StringBuffer, Wrapper classes) Java.util (Date, Random, Calendar, GragorianCalendar, Vector, Enumeration interface, Stack, Hashtable)		
5	Exception Handling	Introduction to Exception Handling Types of Exception Exception handling using try, catch, finally, throw and throws Creating user defined exception class	5	3
6	Threading	Concept of Thread Life Cycle of Thread Creating Thread (Thread class and Runnable Interface) Various Thread methods Thread Priority, Synchronization and Deadlock	5	2
7	Input/Output Operation	Concept of streams Difference between CharacterStreams and ByteStreams CharacterStreams (Reader, Writer, BufferedReader, InputStreamReader, FileReader, BufferedWriter, OutputStreamReader, FileWriter, PrintWriter) ByteStreams (InputStream, FileInputStream, FilterInputStream, BufferedInputStream, DataInputStream, OutputStream , FileOutputStream, FilterOutputStream, BufferedOutputStrem, DataOutputStream, PrintStream) Other Classes (RandomAccessFile, StreamTokenizer, File)	10	6
8	Applet Basic	What is an Applet Applet Lifecycle Applet class, passing parameters to applet Use of Graphics, Color and Font class and its various methods	10	4
9	AWT Controls and Event Handling	AWT Controls(Label, Button, Checkbox, Choice, List, TextField, TextArea, Scrollbar) Event Delegation Model or Event Class Hierarchy All classes and interfaces of Event	10	7

		Delegation. Concept of Adapter Class, Inner Class and Anonymous Inner Class Programmers related to event handling		
10	Layout Managers	What is Layout Managers FlowLayout BorderLayout GridLayout GridBagLayout CardLayout	5	3
11	GUI using Swing	What is swing, Swing Vs. AWT Container class Swing Components (JLabel, JButton, JCheckBox, JCheckboxgroup, JChoice, JTextField, JTextArea, JList, JScrollbar, JPanel, JFrame, JMenu, JMenuBar, JMenultem, JPasswordField, JRadioButton)	20	10
		Total	**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures 60 + 15 = 75

Reference Books:

1. Complete JAVA2 Certification
2. JAVA2 Black Book
3. A Programmer Guide to JAVA Certification by Khalid A. Mughal
4. Programming in JAVA - E Balaguruswamy
5. Programming with JAVA – Bharat & Co.
6. Programming with JAVA – C Jamanadas

ACTECH 3.2 : Web Development using PHP/MYSQL				
Sr. No.	**Topics**	**Details**	**Marks**	**Lec.**
1	Introduction	Intro. Webpage, Website Static and Dynamic Web Client side & Server Side Scripting Introduction to other server side languages Web server (IIS & Apache) HTTP & HTTPS protocol FTP ISP and its Services Web Hosting, Virtual Host, Multi-Homing Distributed Web Server Overview, Document Root	10	5
2	PHP Basic	Introduction to PHP PHP configuration in IIS & Apache Web server Understanding of PHP.INI and PHP.htaccess file PHP Variable Static & global variable GET & POST method PHP Operator Conditional Structure & Looping Structure Array **User Defined Functions**: argument function default arument variable function return function **Variable Length Argument Function** Func_num_args func_get_arg, func_get_args **Variable Function** Gettype, settype, isset, unset, strval, floatval, intval, print_r **String Function** Chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim trim, substr, strcmp, strcasecmp, strops, strrpos, strstr, stristr, str_replace, strrev, echo, print, explode(), implode(), join(), md5(), str_split(), str_shuffle(), strcspn(), strpbrk(), substr_compare(), substr_count(), ucfirst(), ucwords()	55	34

		Math Function : Abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand, cos(), acos(), sin(), asin(), tan(), atan(), bindec(), decbin(), hexdec(), dechex(), is_finite(), is_infinite(), log(), base_convert(), deg2rad() **Date Function** Date, getdate, setdate, Checkdate, time, mktime, date_add(), date_create(), date_format(), gmdate(), localtime(), strftime(), strptime(), strtotime(), gettimeofday(), **Array Function** Count, list, in_array, current, next, previous, end, each, sort, rsort, assort, arsort, array_merge, array_reverse, array_diff(), array_merge_recursive(), array_shift(), array_slice(), array_unique(), array_unshift(), array_keys(), array_key_exists(), array_push(), array_pop(), array_multisort(), array_search() **Miscellaneous Function** define, constant, include, require, header, die, exit **File handling Function** fopen, fread, fwrite, fclose, file_exists, is_readable, is_writable, fgets, fgetc, file, file_get_contents, fputcsv, fputs, file_putcontents, ftell, fseek, rewind, copy, unlink, rename, move_upload_file		
3	Handling Form & Session tracking	Handling form with GET & POST Cookies Session Server variable	5	3
4	PHP Components	PHP GD Library PHP Regular expression Sending mail using mail() Sending mail using smtp() Using php mailer function Pdf creation using php	5	3

5	Interacting with MySQL	Working with MySQL using PhpMyAdmin PHP-MySQL Connectivity PHP-MySQL Functions mysql_connect, mysql_close, mysql_error, msyql_errno, mysql_select_db, mysql_query, mysql_fetch_array, mysql_num_Rows, mysql_affected_Rows, mysql_fetch_assoc ,mysql_fetch_field , mysql_fetch_object, mysql_fetch_row ,mysql_insert_id ,mysql_num_fields ,mysql_result, mysql_tablename ,mysql_list_tables, mysql_list_fields, mysql_field_type ,mysql_db_name , mysql_db_query , mysql_data_seek Advanced mysql : Import and Export database Create and Drop database Use of group by order by Create trigger stored procedure	25	15
			100	60

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures 60 + 15 = 75

Reference Books:

1. Beginning PHP5 by Wankyu Choi, Allan Kent, Chris Lea, Ganesh Prasad, Chris Ullman - WROX
2. PHP Bible, 2nd Edition by Tim Converse, Joyce Park – Wiley Publication
3. Beginning PHP, Apache, MySQL Web Development by Michael K. Glass, Yann Le Scouarnec, Elizabeth Naramore, Gary Mailer, Jeremy Stolz, Jason Gerner - WROX
4. Beginning MySQL by Robert Sheldon, Geoff Moes – WROX
5. Web Development using PHP/MYSQL - Bharat & Co.
6. Web : www.w3schools.com

ACTECH 3.3 : RDBMS using MS SQL Server				
Sr. No.	**Topics**	**Details**	**Marks**	**Lec.**
1	RDBMS Basics	What is RDBMS? Importance of E-R diagram in Relational World E.F Codd's Rules Normalization	10	8
2	Introduction to SQL Server	Overview of SQL Server 2008 Features & Components SQL Server Installation & Configuration SQL Server Editions	5	5
3	SQL Server Database	Database Architecture Understanding SQL Server Database(System) Files & Filegroups Architecture Creating and Managing User Database SQL Server Data Types Creating and Managing Tables Import and Export Database	15	10
4	Accessing and Modifying Data	Data Accessing using SELECT Statement with WHERE Clause, GROUP BY Clause, ORDER BY Clause, HAVING Clause, DISTINCT Operator Joins Subqueries	20	14
5	Data Integrity	Types of Data Integrity PRIMARY KEY Constraint FOREIGN KEY Constraint UNIQUE KEY Constraint NOT NULL CHECK Constraint	15	5
6	Data Access Control and Transaction Control Commands	Grant and Revoke Concept of Transaction Commit Rollback SavePoint	5	3
7	Managing and Manipulating data	What is PL/SQL? SQL v/s PL/SQL Block Structure of PL/SQL and its Examples Control Structures Conditional Statement Looping Statement Sequential Statement Cursor (Implicit & Explicit)	15	10

8	Other Database Object	Implementation of Objects like View Sequence Index Procedures Triggers	15	5
		Total	**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. Beginning Microsoft SQL Server 2008 Administration
   By Chris Leiter, Dan Wood, Michael Cierkowski, Albert Boettger
2. Professional Microsoft SQL Server 2008 Programming - By Robert Vieira
3. Microsoft SQL Server 2008 For Dummies

ACTECH 3.4 : Basic Animation using Flash				
Sr. No.	**Topics**	**Details**	**Marks**	**Lec.**
1	Flash Environment	Flash 8 Interface Menu Bar Timeline Layers Work Area Views or Zooms Panels	5	3
2	Text & Sound	Properties of the Texts Text Effects Importing Sounds Sound Properties Inserting a Sound	5	3
3	Working Layers with Objects	Working with Layers. Layer Type The Objects. Initiation Object Property and Selection Info Panel Groups	10	6
4	Symbols, Graphics & Vector	The Libraries Graphics types What are the Symbols How to create symbols Symbol Effects : Filters & Blends Creating graphics and its properties Exporting a Flash object as bitmap	10	10
5	Animation	What is Animation? Type of Animation • Frame by Frame Animation • Motion Tween Animation • Shape Tween How to run Animation File? • Scrubbing • Playing • Test Movie Animated Masks and Filters Effect of Animation • Brightness • Tint • Alpha Advanced Animation Techniques	30	13
6	File Types	Publishing Animation Animation File Types • Bitmaps in Flash • Video	20	11

		• Web Page in Flash Movie Clip properties Creating a new Movie Clip Importing and Exporting Movie Clips		
7	Action Script	What is Action Script? Button • Creating a Buttons Shapes • Text Buttons • Including Clip in a Button • Bitmaps and buttons • Actions in Buttons • Including a sound in a Button Actions Panel Operators Actions Objects Properties	20	14
		Total	**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. Macromedia Flash 8 On Demand Paperback – by Andy Anderson, Steve Johnson
2. Sams Teach Yourself Macromedia Flash 8 in 24 Hours Paperback
3. Macromedia Flash 8 For Dummies Paperback
4. http://www.teacherclick.com/flash8

ACTECH 3.5 : Practical - I (Based on ACTECH 3.1 & ACTECH 3.4)	
Topics	**Marks**
ACTECH 3.1	**50**
ACTECH 3.4	**50**

ACTECH 3.6 : Practical – II (Based on ACTECH 3.2 & ACTECH 3.3)	
Topics	**Marks**
ACTECH 3.2	**50**
ACTECH 3.3	**50**

UGC B.Voc.- Applied Computer Technology (Semester – IV)

Sr. No.	Paper No.	Subject	Credit
1	ACTECH 4.1	Value Education	5
2	ACTECH 4.2	Advance PHP (OOP, CMS, Wordpress)	5
3	ACTECH 4.3	Advance Web Designing (JQuery, CSS framework, AJAX, Responsive Layout)	5
4	ACTECH 4.4	Project Work - I	5
5	ACTECH 4.5	Practical - I (Based on ACTECH 4.2)	5
6	ACTECH 4.6	Practical - II (Based on ACTECH 4.3)	5
	Total Credits of Semester - IV		**30**

ACTECH 4.1 : Value Education				
Sr. No.	**Topics**	**Details**	**Marks**	**Lec.**
1	Introduction to Value Education	• understanding the need, basic guidelines content and process for Value Education • Self-exploration – its content and process; 'Natural Acceptance' and Experiential Validation – as the mechanism for self-exploration • Continuous Happiness and Prosperity – A look at basic human aspirations • Right understanding, Relationship and Physical Facilities – The basic requirements for fulfillment of aspirations of every human being • Understanding Happiness and Prosperity aspirations: Understanding and living in harmony at various levels • Method to fulfill the above human aspirations: Understanding and living in harmony at various levels	20	12
2	Harmony in the Human Being	• Understanding human being as a co-existence of the sentient 'I' and the material 'Body' • Understanding the needs of Self('I') and 'Body' – *sukh* and *suvidha* • Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer) • Understanding the characteristics and activities of 'I' and harmony in 'I' • Understanding the harmony of 'I' with the Body: *Sanyam* and *Swasthya*; correct apraisal of physical needs, meaning of prosperity in detail • Program to ensure *Sanyam* and *Swasthya*	20	12

3	Harmony in the Family and Society	• Understanding harmony in the Family – the basic unit of human interaction • Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay – tripti*; Trust (*Vishwas*) and Respect (*Samman*) as the foundational value of relationship • Understanding the meaning of *Vishwas*; Difference between intention and competence • Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship • Understanding the harmony in the society (society being an extension of family): *Samadhan, Samridhi, Abhay, Sah-astitva* as comprehensive Human Goals • Visualizing a universal harmonious order in society – Undivided Society (*Akhand samaj*), Universal Order (*Sarvabhaum Vyavastha*) from family to world family.	20	12
4	Harmony in the Nature (Existence)	• Understanding the harmony in the Nature • Interconnectedness and mutual fulfillment among the four orders of nature – recyclability and self-regulations in nature • Understanding existence as co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space • Holistic perception of harmony at all levels of existence	20	12

5	Implications of the Holistic Understanding – A Look at Professional ethics	• Natural acceptance of human values • Definitiveness of Ethical Human Conduct • Basis for Humanistic Education, Humanistic Constitution and Universal Human Order • Competence in Professional Ethics: o Ability to utilize the professional competence for augmenting universal human order, o Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, technologies and management models • Case studies of typical holistic technologies, management models and production systems • Strategy for transition from the present state to Universal Human Order: o At the level of individual: as socially and ecologically responsible engineers, technologist and managers o At the level of society: as mutually enriching institutions and organizations	20	12
		Total	**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. Human Values and Professional ethics – Teacher's Manual By R.R. Gaur, R Sangal G.P. Bagaria - Excel Books
2. Human Values and Professional ethics By R.R. Gaur, R Sangal G.P. Bagaria - Excel Books

ACTECH 4.2 : Advance PHP (OOP, CMS, Wordpress)				
Sr. No.	**Topics**	**Details**	**Marks**	**Lec.**
1	OOP with PHP	PHP with OOPS Class, constructor, inheritance, serialize objects Database Handling with OOPS Defining Class Properties and methods Visibility In PHP (Public, Private and Protected) Inheritance in PHP Abstract class, function overriding, static method, interface, Auto load, Final keyword, object iteration, magic methods Insert, update, delete, listing and searching with the oops	15	10
2	Web Services	SOAP PHP Web Services, Web service Technology Stack, SOAP Soup, Web services with PHP, Installing NuSOAP, Building a SOAP SERVER, Consuming a Web service, Generating WSDL Dynamically, Understanding Generated WSDL, WSDL and SOAP Proxies <u>Json</u> Introduction of json, Uses of JSON, JSON - Comparison with XML, JSON – Syntax, JSON – DataTypes, JSON – Objects, JSON with PHP, json_encode, json_decode json webservice	12	6
3	Introduction to CMS	What is a Content Management System (CMS)? Introduction to CMS WordPress, Joomla and drupal etc….. FIRST POST What Is WordPress? Popularity of WordPress Current State Intersecting the Community WordPress and the GPL	8	5

		Content and Conversation WordPress as a Content Management System Creating Conversation **Getting Started** Hosting Options **Tools for Component Administration** Getting Your Development Stack Adding WordPress to the Local Install **Finishing Up** First-Time Administration		
4	The core of Wordpress	**Using the Core as a Reference** Inline Documentation Finding Functions Exploring the Core Deprecated Functions **WordPress Codex and Resources** What Is the Codex? Using the Codex Function Reference WordPress APIs Codex Controversy **Don't Hack the Core!** Why Not? Alternatives to Hacking the Core	6	2
5	Working with Wordpress	**Downloading** Download Locations Available Formats Release Archive **Directory and File Structure** **WordPress Configuration** Managing the Web Server Document Tree Enabling Debug Information wp-confi g.php File Handling Local and Production Database Advanced wp-confi g Options .htaccess The .maintenance File **wp-content User Playground** Plugins Themes Creating Virtual Local Server Names Uploads and Media Directory Upgrade Directory Custom Directories Creating simple website	15	10

6	The Loop	**Understanding the Loop** From Query Parameters to SQL Understanding Content in WordPress Putting the Loop in Context Flow of the Loop **Customizing the Loop** Using the WP_Query Object Building a Custom Query Adding Paging to a Loop Using query_posts( ) Using get_posts( ) Resetting a Query **Global Variables** Post Data, Author Data, User Data, Environmental Data, Global Variables or Template Tags **Working Outside the Loop**	6	3
7	Data Management	**Database Schema** **Table Details** WordPress Content Tables WordPress Taxonomy Tables **WordPress Database Class** Simple Database Queries Complex Database Operations Dealing with Errors **Direct Database Manipulation**	5	2
8	Custom Post Types, Custom Taxonomies and Metadata	**Understanding Data in WordPress** What Is a Custom Post Type? Register Custom Post Types Setting Post Type Labels Working with Custom Post Types Custom Post Type Template Files Special Post Type Functions **WordPress Taxonomy** Default Taxonomies Taxonomy Table Structure Understanding Taxonomy Relationships **Building Your Own Taxonomies** Custom Taxonomy Overview Creating Custom Taxonomies Setting Custom Taxonomy Labels Using Your Custom Taxonomy **Metadata** What Is Metadata? Adding Metadata Updating Metadata Deleting Metadata Retrieving Metadata	15	10

9	Plugin Development	**Plugin Packaging** Creating a Plugin File Creating the Plugin Header Plugin License Activating and Deactivating Functions Internationalization Determining Paths **Plugin Security** Data Validation and Sanitization **Know Your Hooks: Actions and Filters** Actions and Filters Popular Filter Hooks Popular Action Hooks **Plugin Settings** Saving Plugin Options Array of Options Creating a Menu and Submenus Creating an Options Page **WordPress Integration** Creating a Meta Box Creating a Widget Creating a Dashboard Widget Creating Custom Tables Uninstalling Your Plugin **Creating a Plugin Example** **Publishing to the Plugin Directory** Restrictions Submitting Your Plugin Creating a readme.txt File Setting Up SVN Publishing to the Plugin Directory Releasing a New Version	15	10
10	User Roles	Subscriber Role, Contributor Role Author Role, Editor Role, Administrator Role, Super Admin Role, Role Overview, Extending Roles	3	2
		Total	**100**	**60**

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures

Total Lectures **60 + 15 = 75**

Reference Books:

1. Head First Wordpress 1st Edition
2. WordPress Complete - Packt Publishing
3. Professional WordPress: Design and Development -
   By Hal Stern, David Damstra, Brad Williams
4. Beginning WordPress 3 (Expert's Voice in Web Development) Paperback –
   By Stephanie Leary
5. Professional WordPress Plugin Development by Brad Williams, Ozh Richard, Justin Tadlock
6. Web : www.wordpress.org

ACTECH 4.3 : Advance Web Designing (JQuery, AJAX, CSS framework, Responsive Layout)				
Sr. No.	**Topics**	**Details**	**Marks**	**Lec.**
1	jQuery	What is jQuery ? Need and purpose of JQuery? jQuery and JavaScript, jQuery Install, jQuery Syntax	7	5
2	jQuery Selectors	Identifying DOM elements, Constructing jQuery Selectors The element Selector, The #id Selector, The .class Selector.	10	6
3	jQuery Events	Binding event handlers, Removing event handlers, User Interface/ Mouse events, Event Manipulation, Methods, $(document).ready(),click(), blclick(), mouseenter(), mouseleave(), mousedown(), mouseup(), hover(), focus(), blur()	12	6
4	jQuery Effects	jQuery Hide/Show, jQuery Fade, jQuery Slide, jQuery Animate, jQuery stop(), j Query Callback, jQuery Chaining.	10	7
5	jQuery HTML	jQuery Get, jQuery Set, jQuery Add, jQuery Remove, jQuery CSS Classes, jQuery css().jQuery and AJAX calls Using the ajax() API, Ajax events,Loading data with GET & POST,Working with JSON data.	10	7
6	AJAX	PHP with AJAX What is AJAX. How AJAX Works with PHP Working With Ajax as Background Process	6	4
7	Bootstrap Overview	What is Twitter Bootstrap? History Why use Bootstrap? What Bootstrap Package Includes? Bootstrap Environment Setup Download Bootstrap File structure PRECOMPILED BOOTSTRAP HTML Template	5	3
8	Bootstrap Grid System	What is a Grid? What is Bootstrap Grid System? Mobile first strategy Working of Bootstrap Grid System Media Queries	10	5

		Grid options Bootstrap Grid System Example: Stacked-to-horizontal, Medium and Large Device, Mobile, Tablet, Desktops		
9	Bootstrap CSS Overview	HTML5 doctype Mobile First Responsive images Typography and links, Normalize Containers Bootstrap Typography Headings Lead Body Copy Emphasis Abbreviations, Abbreviations, Abbreviations, Lists	10	5
10	Bootstrap Tables	Basic table, striped table Bordered table, hover table, condensed table Form Layout Vertical and basic forms, Form Control Sizing Supported Form Controls like inputs, textarea, checkboxes and radios Static control, Form Control States, input focus, disabled inputs, validation state	10	6
11	Bootstrap Buttons and Bootstrap Button Groups	Button Tags, Button Size, Button State Basic Button Group, Button Toolbar, Button Size, Nesting.	5	3
12	Bootstrap Navbar	Default navbar Responsive navbar, Static top, Inverted navbar Forms in navbar, Buttons in navbar, Text in navbar, Non-nav links Component alignment, Fixed to top, Fixed to bottom	5	3
		Total	100	60

Student Seminar – 5 Lectures
Expert Talk – 5 Lectures
Student Test – 5 Lectures
Total Lectures 60 + 15 = 75

Reference Books:

1. jQuery for Dummies
2. jQuery Pocket Reference Paperback - by David Flanagan
3. Jquery in Action Paperback – by Bear Bibeault, Yehuda Katz
4. Ajax Black Book Paperback – by Kogent Solutions Inc.
5. Head First Ajax Paperback – by Riordan
6. Bootstrap Paperback - by Jake Spurlock
7. web : http://www.w3schools.com

ACTECH 4.4 : Project Work - I	
Topics	**Marks**
ACTECH 4.4	**100**

ACTECH 4.5 : Practical - I (Based on ACTECH 4.2)	
Topics	**Marks**
ACTECH 4.2	**100**

ACTECH 4.6 : Practical – II (Based on ACTECH 4.3)	
Topics	**Marks**
ACTECH 4.3	**100**

Enclosure –I D

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

Department of Computer Science & Information Technology

M.Sc. INFORMATION TECHNOLOGY & COMPUTER APPLICATION

Regulations for Students Admitted from A.Y. 2016-2017 & Onwards

ELIGIBILITY

Candidate who has passed B.Sc.I.T. / B.C.A. / B.Voc. / B.Sc. / B.E. / B.Tech. / B.Pharm. / B.Arch. / B.Com (with Computer) with 48% or more OR any graduate with PGDCA/PGDACA with 48% or more in graduation or in PGDCA/PGDACA shall be eligible for admission, subject to such other conditions prescribed by the Saurashtra University and State Government from time to time. All admissions are provisional and subject to the approval of Saurashtra University

DURATION OF THE PROGRAMME

The Programme shall extend over a period of two years comprising of four semesters with two semesters in one academic year. Each semester normally consists of 90 teaching days.

STRUCTURE OF THE PROGRAMME

The PG programme shall have a curriculum comprising theory and practical courses with a specified syllabus. The curriculum of the programme is a blend of theory courses and practical courses as Core and Discipline Specific Electives (DSE). In addition, Project and Competency Enhancement Courses shall be offered.

The medium of instruction and examinations shall be English except for courses on languages other than English.

EVALUATION

The evaluation will generally comprise of Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) with percentage weightage as specified below, unless specified otherwise in the Scheme of Instruction and Examinations.

Theory Subjects		***Practical Subjects***	
Continuous Internal Evaluation (CIE)	30%	Continuous Internal Evaluation (CIE)	40%
Semester End Examination (SEE)	70%	Semester End Examination (SEE)	60%

For the purpose of computation of credits the following mechanism is adopted:

a) 1 hour instruction of Theory = 1 Credit
b) 1 hour instruction of Tutorial = 1 Credit
c) 2-3 hours instructions of Practical = 1 Credit

ISSUE OF MARKSHEET AND DEGREE CERTIFICATE

The college shall publish the result after evaluation and with the recommendations of Result Passing Board at the end of each semester. On approval/ratification of the results by the Academic Council, the candidate will be recommended to Saurashtra University for the award of the degree on completion of all the courses and components of the curriculum.

Enclosure –II D

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

Department of Computer Science & Information Technology
M.Sc. INFORMATION TECHNOLOGY & COMPUTER APPLICATION

OBJECTIVES OF THE PROGRAMME

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

- To develop mastery of emerging technologies in IT infrastructures, software development, IT systems management including IT security and to appreciate the necessity for continuing professional development.
- To demonstrate understanding of and apply current theories, models and techniques for the software development process.
- 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.
- Specify, design, develop, test and manage application software systems to meet the operational and business requirements of organizations.
- 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							
16PITCC01	**Core 1:** Advanced Web Development in LARAVEL	4	3	30	70	100	4
16PITCC02	**Core 2:** No SQL Database MongoDB	4	3	30	70	100	4
16PITDC01 / 16PITDC02	**DSE-1:** Application Development using J2EE / Application Development using ASP.NET	5	3	30	70	100	5
16PITCC03	**Core Practical 1:** Advanced Web Development in LARAVEL Practical and No SQL Database MongoDB Practical	4	3	40	60	100	2
16PITDC03 / 16PITDC04	**DSE Practical 1:** Application Development using J2EE Practical / Application Development using ASP.NET Practical	4	3	40	60	100	2
16PITCC04	Project	6	3	60	40	100	4
		27				**600**	**21**
Part - III							
16PVE01	Value Education	**1**	**-**	Remarks			**1**
		28					**22**

Semester - II							
Course Code	**Course**	**Hrs. of Instruction / week**	**Exam Duration (Hours)**	**Maximum Marks**			**Credits**
				CIE	**SEE**	**Total**	
Part - I							
16PITCC05	**Core 3:** Application Development using Advanced Android	4	3	30	70	100	4
16PITCC06	**Core 4:** Introduction to Big Data & Hadoop	4	3	30	70	100	4
16PITCC07	**Core 5** : Cloud Computing	4	3	30	70	100	4
16PITDC05 / 16PITDC06	**DSE 2:** Web Searching Technologies & Search Engine Optimization / Wireless Communication & Mobile Programming	4	3	30	70	100	4
16PITCC08	**Core Practical 2:** Application Development using Advanced Android Practical	4	3	40	60	100	2
16PITCC09	**Core Practical 3:** Introduction to Big Data & Hadoop Practical & Cloud Computing Practical	4	3	40	60	100	2
16PITCC10	Project	6	3	60	40	100	4
		30				**700**	**24**

- **PART – I : CORE, DSE**

CORE COURSES [Theory]

S. No	Semester	Course code	Course
1.	I	16PITCC01	Advanced Web Development in LARAVEL
2.		16PITCC02	No SQL Database MongoDB
3.	II	16PITCC05	Application Development using Advanced Android
4.		16PITCC06	Introduction to Big Data & Hadoop
5.		16PITCC07	Cloud Computing

CORE COURSES [Practical]

S. No	Semester	Course code	Course
1.	I	16PITCC03	Advanced Web Development in LARAVEL and No SQL Database MongoDB
2.	II	16PITCC08	Application Development using Advanced Android
3.	II	16PITCC09	Introduction to Big Data & Hadoop & Cloud Computing

- **OTHER CORE COURSES**

S. No.	Semester	Course Code	Course
1.	I	16PITCC04	Project
2.	II	16PITCC10	Project

- **DSE CORE COURSES [Theory & Practical]**

Students are required to opt for any one of the courses offered in 1st & 2nd semesters respectively.

S. No	Semester	Theory		Practical	
		Course code	Course	Course code	Course
1.	I	16PITDC01/	Application Development using J2EE /	16PITDC03/	Application Development using J2EE /
		16PITDC02	Application Development using ASP.NET	16PITDC04	Application Development using ASP.NET
2.	II	16PITDC05/	Web Searching Technologies & Search Engine Optimization /	-	-
		16PITDC06	Wireless Communication & Mobile Programming	-	-

- **Part –III VALUE EDUCATION**

S. No.	Semester	Course Code	Course
1.	I	16PVE01	Value Education

Enclosure –III

Shree Manibhai Virani and Smt. Navalben Virani Science College, Rajkot (Autonomous)
Affiliated to Saurashtra University, Rajkot
Department of Computer Science & Information Technology
List of Paper setters and Examiners

Sr. No.	Name & Address	Designation	Contact Detail
Internal Paper Setters and Examiners			
1.	(Dr.) Stavan Patel "Tuhi Tuhi", 6 – Yogipark, B/H Rani Tower, Opp : Parishram School, Kalawad Raod, Rajkot	Head, Department of Computer Science & I.T., Shree M. & N. Virani Science College, Rajkot	Cont. No.: 9978590909 email : stavan@vsc.edu.in
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12.	Mr. Pradip T. Vaishnav, Department of Computer Science & I.T., Shree M. & N. Virani Science College, Atmiya Group of Institutions, Kalawad Road, Rajkot	Asst. Prof. Department of Computer Science & I.T., Shree M. & N. Virani Science College, Rajkot	Cont. No.: 9426136126 email : ptvaishnav@vsc.edu.in
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Sr. No.	Name & Address	Designation	Contact Detail
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25.	Ms. Vaishali Bharvada, Department of M.C.A., Atmiya Institute of Technology & Science, Rajkot	Asst. Prof. Department of M.C.A. Atmiya Institute of Technology & Science, Rajkot	Cont. No. : 9374106972 email: vmbharvada@aits.edu.in
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27.	Ms. Vaishali Kaneriya, Department of M.C.A. Atmiya Institute of Technology & Science, Rajkot	Asst. Prof. Department of M.C.A. Atmiya Institute of Technology & Science, Rajkot	Cont. No.: 9428348801 email: vvkaneria@aits.edu.in