CRITERION 1 - CURRICULAR ASPECTS

1.1 CURRICULUM DESIGN & DEVELOPMENT

1.1.3 List of Courses Focussing on Employability/Enterprenuership/Skill Development

Programme Name & Code - B Sc-Computer Science-15

SI no	Course code	Name of Course	Old/New Syllabus	Employability	Enterprenuership	Skill Development
1	1615101	Core I: Fundamentals of Digital Electronics	Old Syllabus	✓	-	✓
2	1615102	Core II: Problem Solving Techniques	Old Syllabus	✓	-	✓
3	16158103	Allied I : Mathematics - I	Old Syllabus	✓	-	✓
4	1615103	NME I: Logical and Analytical Reasoning / Basic Tamil	Old Syllabus	✓	-	✓
5	1615205	Core III: Introduction to C++ Programming	Old Syllabus	✓	-	✓
6	1615206	Core IV: Microprocessor and its Applications	Old Syllabus	✓	-	✓
7	1608210	Allied II : Mathematics - II	Old Syllabus	✓	-	✓
8	1615207	NME II : Contemporary Management Skills / Basic Tamil	Old Syllabus	✓	-	✓
9	1615309	Core V: Object Oriented Programming using C++	Old Syllabus	✓	-	✓
10	1615310	Core VI: Data Structures and Algorithms	Old Syllabus	✓	-	✓
11	1608320	Allied III : Sttistical Methods	Old Syllabus	✓	-	✓
12	1615412	Core VII: Java Programming	Old Syllabus	✓	-	✓
13	1615413	Elective 1 : Computer Architecture / Client –Server Technology/ Artificial Intelligence and Expert Systems	Old Syllabus	✓	-	✓

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CRITERION 1 - CURRICULAR ASPECTS
1.1 CURRICULUM DESIGN & DEVELOPMENT
1.1.3 List of Courses Focussing on Employability/Enterprenuership/Skill Development

Programme Name & Code - B Sc-Computer Science-15

Sl no	Course code	Name of Course	Old/New Syllabus	Employability	Enterprenuership	Skill Development
14	1608425	Allied IV: Resource Management Techniques	Old Syllabus	✓	-	✓
15	1615515	Core IX: Operating Systems	Old Syllabus	✓	-	✓
16	1615516	Core X: Database Management Systems	Old Syllabus	✓	-	✓
19	1615517	Core XI: Computer Graphics	Old Syllabus	✓	-	✓
20	1615518	Elective II : CoreXII: Linux and shell programming/ Advanced Java Programming/ Visual Programming	Old Syllabus	✓	-	✓
21	1615621	Core XIII: Data Communication and Networking	Old Syllabus	✓	-	✓
22	1615622	Core XIV: Web Programming	Old Syllabus	✓	-	✓
23	1615623	CoreXV: Software Engineering	Old Syllabus	✓	-	✓
24	1615624	Elective III : Introduction to PHP/ Multimedia Systems/ Data mining	Old Syllabus	✓	-	✓
25	1815102	Core II: Digital Electronics and Microprocessor	New Syllabus	✓	-	✓
26	1815206	Core IV: Data Structures	New Syllabus	✓	-	✓
27	1815310	Core VI: Web Design	New Syllabus	✓	-	✓

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CRITERION 1 - CURRICULAR ASPECTS

1.1 CURRICULUM DESIGN & DEVELOPMENT

1.1.3 List of Courses Focussing on Employability/Enterprenuership/Skill Development

Programme Name & Code - B Sc-Computer Science-15

Sl no	Course code	Name of Course	Old/New Syllabus	Employability	Enterprenuership	Skill Development
28	1815413	Elective 1 : ComputerNetworks / Client –Server Technology/ Artificial Intelligence and Expert Systems	New Syllabus	✓	-	✓
29	1815517	Core XI: Computer Graphics	Old Syllabus	✓	-	✓
30	1815518	Elective II : CoreXII: ASP. Net Programming / Advanced Java Programming/ Multimedia	New Syllabus	✓	-	✓
32	1815622	Core XIV: Python Programming	New Syllabus	✓	-	✓
33	1815624	Elective III : Data mining / Digital Image Processing/Unified Modeling Language	New Syllabus	✓	-	✓

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DEPARTMENT OF COMPUTER SCIENCE
(B.Sc. Computer Science)
Programme Code:15

SYLLABUS

(Choice Based Credit System)

FOR STUDENTS ADMITTED FROM 2016-2017 ONWARDS

PRINCIPAL
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Dwaraka Doss Goverdhan Doss Vaishnav College (Autonomous)

B.Sc. DEGREE COURSE COMPUTER SCIENCE

Choice Based Credit System

REGULATIONS

(Effective from the academic year 2016-2017 onwards)

1. ELIGIBILITY FOR ADMISSION:

Candidates for admission to the first year of the Degree of Bachelor of Science courses shall be required to have passed the Higher Secondary Examinations (Academic or Vocational Stream) conducted by the Government of Tamil Nadu or an Examination accepted as equivalent thereof by the Syndicate of the University of Madras.

2. ELIGIBILITY FOR THE AWARD OF DEGREE:

A candidate shall be eligible for the award of the Degree only if he /she has undergone the prescribed course of study in a College affiliated to the University for a period of not less than three academic years, passed the examinations all the Six-Semesters prescribed earning 140 (120 are meant for Langauage-1, Language-2, Allied, Major, and 20 credits for other activities like Non-Major Elective, Soft Skills, Environmental Studies, Value Education, Extension activities etc.,)

3. DURATION:

a) Each academic year shall be divided into two semesters. The first academic year shall comprise the first and second semesters, the second academic year the third and fourth semesters and the third academic year the fifth and sixth semester respectively.

b) The odd semesters shall consist of the period from June to November of each year and the even semesters from December to April of each year. There shall be not less than 90 working days for each semester.

4. COURSE OF STUDY:

The main Subject of Study for Bachelor Degree Courses shall consist of the following:

PART – I   TAMIL / OTHER LANGUAGES

PART – II   ENGLISH

PART – III   CORE SUBJECTS
                ALLIED SUBJECTS
                PROJECT/ELECTIVES WITH THREE COURSES

PART – IV

   1. NON- MAJOR ELECTIVE

      a) Those who have studied Tamil up to XII Std. under Part-I shall take courses comprising of aptitude and management skills or Advanced Tamil comprising of two courses.

      b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).

   2. SKILL BASED SUBJECTS - SOFT SKILLS

   3. ENVIRONMENTAL STUDIES

   4. VALUE EDUCATION

PART – V   EXTENSION ACTIVITIES

5. EXTENSION ACTIVITIES:

        A candidate shall be awarded a maximum of 1 Credits for Compulsory Extension Service.

        All the Students shall have to enroll for NSS /NCC/ NSO (Sports & Games) Rotract/Youth Red cross or any other service organizations in the college and shall have to put in   Compulsory minimum attendance of 40 hours which shall be duly certified by the Principal of the college before 31st March in a year. If a student LACKS 40 HOURS ATTENDANCE in the First year, he/she shall have to compensate the same during the subsequent years.

        Students those who complete minimum attendance of 40 hours in One year will get HALF A CREDIT and those who complete the attendance of 80 or more hours in Two Years will ONE CREDIT.

        Literacy and population Education Field Work shall be compulsory components in the above extension service activities.

6. SCHEME OF EXAMINATION:

Scheme of Examination shall be given in **APPENDIX – C**

Model Scheme

Course Component Name of the course	Inst. Hour	Credits	Exam Hours	Max. Marks		
				Ext. mark	Int. mark	Total
PART-I **Language**				60	40	100
PART-II **English**				60	40	100
PART-III **Core subject**				60	40	100
Core Subject : Practical				60	40	100
Allied Subject*				60	40	100
PART – IV **1. NON- MAJOR ELECTIVE** a) Those who have studied Tamil up to XII Std. under Part-I shall take courses comprising of aptitude and management skills or Advanced Tamil comprising of two courses. b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).				60	40	100
2. **Skill based subjects** – Soft Skill**				50	50	100

* Syllabus framed and approved by Mathematics Department.
** Syllabus framed and approved by English Department

The following procedure is followed for awarding marks:

Theory Paper Internal Marks – 40 Marks

Criteria	Marks Awarded
Test (2 out of 3)	10
Attendance	5
Seminars	5
Assignments	5
Classroom Activity/Interaction/General Behavior	5
Other Curricular Activities	3
Model Exam	7
Total Marks	40

Breakup of Attendance Marks

Range of Attendance	Marks Awarded
Below 65%	0
65% to 70%	1
70% to 75%	2
75% to 80%	3
80% to 90%	4
91% to 100%	5

Practical- Internal Marks

Criteria	Marks Awarded
Practical Test (Best 2 out of 3)	30
Record	10
Total Marks	40

7. REQUIREMENTS FOR PROCEEDING TO SUBSEQUENT SEMESTER:

i. Candidates shall register their names for the First Semester Examination after the admission in UG Courses.

ii. Candidates shall be permitted to proceed from the First Semester up to Final Semester irrespective of their failure in any of the Semester Examination subject to the condition that the candidates should register for all the arrear subject of earlier semesters along the current (subsequent) Semester Subjects.

iii. Candidates shall be eligible to go to subsequent semester, only if they earn sufficient attendance as prescribed by the Academic council of the college from time to time. Provided in case of a candidate earning less than 50% of attendance in any one of the Semesters due to any extraordinary circumstances such as medical grounds, such candidates who shall produce Medical Certificate issued by the Authorized Medical Attendant (AMA), duly certified by the Principal of the college, shall be permitted to proceed to the next semester and to complete the Course of study. Such Candidates shall have to repeat the missed Semester by rejoining after completion of Final Semester of the course, after paying the fee for the break of study as prescribed by the University from time to time.

8. PASSING MINIMUM:

A candidate shall be declared PASS based on the following,

a) There shall be no Passing Minimum for Internal.

b) For External Examination, Passing Minimum shall be of 40% (Forty Percentage) of the maximum marks prescribed for the paper for each Paper/Practical/Project and Viva-voce.

c) In the aggregate (External + Internal) the passing minimum shall be of 40%.

d) She/ He shall be declared to have passed the whole examination, if she/he passes in all the papers and practical wherever prescribed/as per the scheme of examinations by earning 140 CREDITS in Parts-I, II, III, IV & V. She/he shall also fulfill the extension activities prescribed earning a minimum of 1 Credit to qualify for the Degree.

9. CLASSIFICATION OF SUCCESSFUL CANDIDATES:

PART- I TAMIL / OTHER LANGUAGES (Sanskrit, Hindi and Telugu)

TAMIL/OTHER LANGUAGES: Successful candidates passing the Examinations for the Language and securing the marks (i) 60 percent and above and (ii) 50 percent and above but below 60 percent in the aggregate shall be declared to have passed the examination in the FIRST and SECOND class, respectively. All other successful candidates shall be declared to have passed the examination in the THIRD Class.

PART – II ENGLISH

ENGLISH: Successful candidates passing the examinations for English and securing the marks (i) 60 percent and above and (ii) 50 percent and above but below 60 percent in the aggregate shall be declared to have passed the examination in the FIRST and SECOND Class, respectively. All other successful candidates shall be declared to have passed the examination in the THIRD class.

PART – III Consisting of CORE SUBJECTS,   ALLIED SUBJECTS, PROJECT/ ELECTIVE with three courses:

Successful candidates passing the examinations for Core Courses together and securing the marks (i) 60 percent and above (ii) 50 percent and above but below 60 percent in the aggregate of the marks prescribed for the Core courses together shall be declared to have passed the examination in the FIRST and SECOND Class respectively. All other successful candidates shall be declared to have passed the examinations in the Third Class.

PART – IV (consisting of sub items 1 (a), (b) & (c), 2, 3 and 4) as furnished in the Regulations 4 Part-IV supra.

PART – V EXTENTION ACTIVITIES**:**

Successful Candidate earning of 1 credit SHALL NOT BE taken into consideration for Classification/Ranking/ Distinction.

10. RANKING:

Candidates who pass all the examinations prescribed for the course in the FIRST APPEARANCE ITSELF ALONE are eligible for Ranking/ Distinction. Candidates who pass all the examinations prescribed for the Course with a break in the First Appearance due to the reasons as furnished in the Regulations. 7 (iii) supra are only eligible for classification.

11. TRANSITORY PROVISION:

Candidates who have undergone the course of study prior to the academic year   2008–2009 will be permitted to appear for the examinations under those Regulations for a period of TWO years i.e. up to and inclusive of April/May 2012 Examinations. Thereafter, they will be permitted to appear for the examination only under the Regulations then in force.

QUESTION PAPER PATTERN FOR THEORY

Duration: 3 hours   **Max Marks: 100**

Part – A

FIVE out of EIGHT questions. (5 x 5 = 25 Marks)

At least **ONE** question from each unit and **not more than two questions** from each unit.

Part –B

FIVE questions (Internal Choice) (5 x 15 = 75 Marks)

ONE question from each unit. (Either or type).

QUESTION PAPER PATTERN FOR PRACTICALS

Duration: 3 hours   **Max Marks: 60**

The **External Examiner** will prepare a question paper on the spot with the help of the Question Bank supplied by the Controller's office.

B.Sc. DEGREE COURSE COMPUTER SCIENCE

<u>FIRST SEMESTER</u>

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART –I** Language Paper I	3	3	60	40	100	4
2.	**PART–II** English Paper I	3	3	60	40	100	4
3.	**PART-III** Paper I - Fundamentals of Digital Electronics	3	3	60	40	100	5
4.	**PART –III** Paper II - Problem Solving Techniques	3	3	60	40	100	4
5.	**PART-III** Practical I - Digital Electronics Lab	2	3	60	40	100	3
6.	**ALLIED PAPER – I** Mathematics – I*	5	3	60	40	100	6
7.	**PART-IV** **1. NON-MAJOR ELECTIVE** a) Those who have studied Tamil up to XII Std. shall take either Logical and Analytical Reasoning or Advanced Tamil. b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).	2	3	60	40	100	2
8.	**2. SOFT SKILLS ****	3	3	50	50	100	2
	TOTAL	**24**					**30**

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** Syllabus framed and approved by English Department

SECOND SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART –I** Language Paper II	3	3	60	40	100	4
2.	**PART–II** English Paper II	3	3	60	40	100	4
3.	**PART-III** Paper III - Introduction to C++ Programming	3	3	60	40	100	4
4.	**PART-III** Paper IV - Microprocessor and its Applications	3	3	60	40	100	4
5.	**PART-III** Practical II - C++ and Microprocessor Lab	2	3	60	40	100	4
6.	**Allied Paper - II** Mathematics - II*	5	3	60	40	100	6
7.	**PART-IV** **1. NON-MAJOR ELECTIVE** a) Those who have studied Tamil up to XII Std. shall take either Contemporary Management Skills or Advanced Tamil. b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).	2	3	60	40	100	2
8.	**2. Soft skills ****	3	3	50	50	100	2
	TOTAL	**24**					**30**

* Syllabus framed and approved by Mathematics Department
** Syllabus framed and approved by English Department

THIRD SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART I** Language Paper III	3	3	60	40	100	4
2.	**PART–II** English Paper III	3	3	60	40	100	4
3.	**PART-III** Paper V - Object Oriented Programming using C++	3	3	60	40	100	5
4.	**PART-III** Paper VI - Data Structures and Algorithms	3	3	60	40	100	5
5.	**PART-III** Practical III - OOPS and Data Structures lab using C++	2	3	60	40	100	4
6.	**ALLIED PAPER III** Statistical Methods*	5	3	60	40	100	6
7.	**PART IV** Soft Skills **	3	3	50	50	100	2
	TOTAL	**22**					**30**

* Syllabus framed and approved by Mathematics Department
** Syllabus framed and approved by English Department

FOURTH SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	**Internal**	**Total**	
1.	**PART I** Language Paper IV	3	3	60	40	100	4
2.	**PART–II** English Paper IV	3	3	60	40	100	4
3.	**PART-III** Paper VII - Java Programming	3	3	60	40	100	4
4.	**PART-III** Paper VIII - Elective I- Computer Architecture / Client –Server Technology/ Artificial Intelligence and Expert Systems	3	3	60	40	100	4
5.	**PART-III** Practical IV - Java Programming Lab	2	3	60	40	100	4
6.	**ALLIED PAPER – IV** Operation Research*	5	3	60	40	100	6
7.	**PART IV** Soft Skills**	3	3	50	50	100	2
8.	**PART IV** Environmental Studies	2	3	60	40	100	2
	TOTAL	**24**					**30**

* Syllabus framed and approved by Mathematics Department
** Syllabus framed and approved by English Department

FIFTH SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART-III** PAPER IX - Operating Systems	4	3	60	40	100	5
2.	**PART-III** PAPER X - Database Management Systems	4	3	60	40	100	5
3.	**PART-III** PAPER XI - Computer Graphics	4	3	60	40	100	5
4.	**PART-III** PAPER XII - Elective II-Linux and shell programming/ Advanced Java Programming/ Visual Programming	4	3	60	40	100	5
5.	**PART-III** Practical V - RDBMS Lab	3	3	60	40	100	5
6.	**PART-III** Practical VI - Lab Based on Elective II	3	3	60	40	100	5
7.	**PART-IV** Value Education	1	3	60	40	100	-
	TOTAL	**23**					**30**

SIXTH SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART-III** PAPER XIII - Data Communication and Networking	4	3	60	40	100	5
2.	**PART-III** PAPER XIV - Web Programming	4	3	60	40	100	5
3.	**PART-III** PAPER XV - Software Engineering	4	3	60	40	100	5
4.	**PART-III** PAPER XVI - Elective III -Introduction to PHP/ Multimedia Systems/ Data mining	4	3	60	40	100	5
5.	**PART-III** Practical VII - Web Programming Lab	3	3	60	40	100	5
6.	**PART-III** Practical VIII - Lab based on Elective III	3	3	60	40	100	5
7.	**PART IV** Extension Activities	1					
	TOTAL	**23**					**30**

I B.Sc. (CS)		Sub. Code
SEMESTER I	FUNDAMENTALS OF DIGITAL ELECTRONICS	Hrs/Week - 5
PAPER I		Credits - 3

OBJECTIVE:

- The main objective of digital logic design is to show how digital circuits are designed today.

UNIT – I   **10 Hrs**

Digital Computers and Digital Systems - Number Systems & Codes: Number System - Base Conversion - Binary Codes - Code Conversion. Digital Logic: Logic Gates - Truth Tables - Universal Gates.

UNIT – II   **10 Hrs**

Boolean algebra: Laws & Theorems - SOP, POS Methods - Simplification Of Boolean Functions - Using Theorems, K-Map, - Implementation Using Universal Gates.

UNIT – III   **15 Hrs**

Binary Arithmetic: Binary Addition - Subtraction - Arithmetic Building Blocks - Adders - Subtractors - Combinational Logic: Multiplexers - Demultiplexers - Decoders – Encoders

UNIT – IV   **10 Hrs**

Sequential Logic: RS, JK, D, And T Flip-Flops - Edge-Triggered - Master-Slave Flip- Flops, Registers: Shift Registers - Types of Shift Registers.

UNIT – V   **15 Hrs**

Counters: Asynchronous Counters Ripple, Mod, Up-Down Counters- Synchronous Counters - Types of ROM and RAM.

TEXT BOOKS:

1. **D. P. Leach & A. P. Malvino,** "Digital Principles and Applications", Fifth Edition, 2002, TMH.

REFERENCE BOOKS:

1. **M.Moris Mano**, "Digital Logic and Computer Design", First Edition, 2004, Pearson.
2. **T. C.Bartee**, "Digital Computer Fundamentals", Sixth Edition, 1991, TMH.
3. **R.J.Tocci**, "Digital System Principles and Applications", Tenth Edition, 2012, Pearson Education.

E-REFERENCES:

1. http://nptel.iitm.ac.in/video.php?subjectId=117106086
2. http://nptel.iitm.ac.in/Onlinecourses/Srinivasan/

I B.Sc. (CS)		Sub. Code
SEMESTER I	PROBLEM SOLVING TECHNIQUES	Hrs/Week - 4
PAPER II		Credits - 3

OBJECTIVE:

- The main objective is to understand and to solve the problems for any task.

UNIT – I   **10 Hrs**

Introduction - Computer Basics - Software And Programming Languages - Data and Data Types - Basic Programming Concepts - Developing A Program: The Program Development Cycle - Program Design Cycle - Coding, Documenting And Testing A Program - Structured Programming - An Introduction to GUI's and OOP.

UNIT – II   **10 Hrs**

Algorithm – Definition – Characteristics – Examples - Introduction to flowcharts – Types of flowcharts – Program flowchart – Examples.

UNIT – III   **15 Hrs**

Repetition Structures: Introduction – Counter Controlled Loops – Applications -Nested Loops. Selection Structures – Introduction - Relational and Logical Operators -Selecting from Several Alternatives – Applications.

UNIT – IV   **15 Hrs**

Numeric Data - Character Based Data - One Dimensional Array - Two Dimensional Arrays - Strings as Arrays of Characters.

UNIT – V   **10 Hrs**

Data Flow Diagrams and Parameters - Sub Programs - Functions – Recursion -Introduction to Files - Modifying Sequential Files.

TEXT BOOK:

1. **Stewart Venit**, "Introduction to Programming: Concepts and Design", Fourth Edition, 2010, Dream Tech Publishers.

E- REFERENCES:

1. http://www.nptel.iitm.ac.in/video.php?subjectId=106102067
2. http://utubersity.com/?page_id=876

I B.Sc. (CS)	DIGITAL ELECTRONICS LAB	Sub. Code
SEMESTER I		Hrs/Week - 3
PRACTICAL I		Credits - 2

OBJECTIVE:

- The main objective is to understand and to solve the problems for any task.

EXERCISES:

1. Verification of Truth Table for AND, OR, NOT, NAND, NOR and EX-OR gates.
2. Realization of NOT, AND, OR, EX-OR gates using NAND gate.
3. Realization of NOT, AND, OR, EX-OR gates using NOR gate.
4. Karnaugh Map Reduction and Logic Circuit Implementation.
5. Verification of DeMorgan's Law
6. Verification of Associative Law
7. Verification of Distributive Law.
8. Implementation of Half-Adder and Full-Adder.
9. Implementation of Half-Subtractor and Full-Subtractor.
10. Four Bit Binary Adder
11. Four Bit Binary Subtractor
12. Decimal adder
13. Verification of Characteristic Table of various flipflops
14. Design of Shift registers
15. Design of Counters

I B.Sc.(CS)		Sub. Code
SEMESTER I	**LOGICAL AND ANALYTICAL REASONING**	Hrs/Week - 2
PART IV		Credits - 2
PAPER I		

OBJECTIVE:

- To develop the skills relating to logical and analytical reasoning.

UNIT – I   **6 Hrs**

Questions relating to analogy test, classification, coding and de-coding, classification of ranks

UNIT – II   **6 Hrs**

Logic based Venn diagrams, Logical alphabet, number and time sequence test.

UNIT – III   **6 Hrs**

Logical arrangement of words, Blood relations, Letter series

UNIT – IV   **6 Hrs**

Questions relating to Completion of series, Counting of figures

UNIT – V   **6 Hrs**

Embedded figure, Anology, Classification of figures

TEXT BOOK:

1. **B.S.Sijwali, Indu Sijwali** – "A new approach to reasoning, verbal and non-verbal", Arihant Publications Pvt. Ltd.

E - REFERENCES:

1. indiabix.com
2. a2zinterviews.com
3. edugoog.com

I B.Sc. (CS)		Sub. Code
SEMESTER II	**INTRODUCTION TO C++ PROGRAMMING**	Hrs/Week - 4
PAPER III		Credits - 3

OBJECTIVE:

- To develop the programming skills with the basic concepts in C++.

UNIT – I   **10 Hrs**

Introduction to Object Technology - Objects and Methods - Classes - Declaring classes and objects - Concept of OOAD - Key Object Orientation Concepts and Elementary C++ programming - I/O statements - Fundamental types - Operators.

UNIT – II   **10 Hrs**

Control Structures: Decision making statements- if , if-else, else-if ladder, nested if, Switch statements - Looping Statements- while, do-while, for - break, continue, goto statements.

UNIT – III   **15 Hrs**

Functions - Library functions - User-defined functions - Function declarations and definitions - Passing arguments - Inline functions - Overloading.

UNIT – IV   **15 Hrs**

Arrays - Defining and Processing - Initializing - Passing arrays to functions - Enumeration type - Multidimensional arrays - String manipulation - Strings and arrays - Structures and unions - Passing structures to functions - Structure within structure.

UNIT – V   **10 Hrs**

Pointers - The reference operator - References - The dereference operator - Derived types - Arrays and pointers - Dynamic arrays - Arrays of Pointers - Pointer to arrays - Pointer to pointers - Pointer to functions.

TEXT BOOKS:
1. **John R Hubbard,** "Programming with C++", Third Edition, 2009, TMH.
2. **E.Balaguruswamy**, "Object Oriented Programming in C++", Sixth Edition, 2012, TMH.

REFERENCE BOOKS:
1. **H. Schildt**, "The Complete Reference C++", Fourth Edition, 2002, TMH
2. **Kanetkar Y**,"Let us C++", Third Edition, 1999, BPB Publishers.

E-REFERENCES:
1. http://en.highscore.de/cpp/boost/
2. http://bookboon.com/en/structural-programming-with-c-plus-plus-ebook

I B.Sc. (CS)		Sub. Code
SEMESTER II	MICROPROCESSOR AND ITS APPLICATIONS	Hrs/Week - 4
PAPER IV		Credits - 3

OBJECTIVE:

- The main objective is to have a clear idea about 8085 microprocessor and its applications.

UNIT – I   **10 Hrs**

Introduction to Micro Computers, Microprocessors and Assembly Languages – Microprocessor architecture and its operations- 8085 MPU – 8085 Instruction set and classifications**.**

UNIT – II   **10 Hrs**

Writing assembly levels programs- Programming techniques such as looping, counting and indexing addressing modes – Data transfer instructions – Arithmetic and logic operations – Dynamic debugging.

UNIT – III   **15 Hrs**

Counter and Time delays- Hexadecimal counter – Modulo 10 counter- Pulse Timings for flashing lights – Debugging counter and time delay program – stack subroutine- conditional call and return instructions.

UNIT – IV   **15 Hrs**

BCD to Binary and Binary to BCD conversions- BCD to HEX and Hex to BCD conversions- AS CII to BCD and BCD to ASCII conversions – BCD to Seven segment LED Code conversions – Binary to ASCII and ASCII to Binary conversions – Multibyte Addition – Multibyte subtraction – BCD addition – BCD Subtraction -   Multiplication and Division.

UNIT – V   **10 Hrs**

Interrupt – Implementing interrupts – Multiple interrupt – 8085 – trap – Problem on implementing 8085 interrupt – DMA – Memory interfaces – Ram & Rom – I/O interface – Direct I/O – Memory mapped I/O. Introduction to 8086 microprocessor – 8086 instruction set and classifications.

TEXT BOOKS:

1. **R.S. Gaonkar**, "Microprocessor Architecture, Programming and Applications with 8085/8080A", Fifth Edition, 1990, Wiley Eastern Limited.

REFERENCE BOOKS:

1. **A. Mathur**, "Introduction to Microprocessor", Third Edition, 1993, TMH.

E-REFERENCE:

1. http://www.b-u.ac.in/sde_book/msc_organ.pdf

I B.Sc. (CS)		Sub. Code
SEMESTER II	CONTEMPORARY MANAGEMENT SKILLS	Hrs/Week - 2
PART IV PAPER II		Credits - 2

OBJECTIVE:

- The main objective is to develop the personality and behavioral skills of students.

UNIT – I   **6 Hrs**

Understanding the Self -Personality - Meaning, Types. Theories- Trait Factor Theory, Psychoanalytic Theory, Socio-Psychological Theory, Self Theory, Personality Factors, Process of Personality Development, Vision and Goal in Life. Introduction to Briggs - Myers personality types.

UNIT – II   **6 Hrs**

Developing the Self Positive Psychology - optimism - Dimensions of Optimizing - Emotional Management: Emotions of Intelligence Roles -Emotional Intelligence in workplace - Self Efficacy - Process, & Impact of Implications - Self assertiveness.

UNIT – III   **6 Hrs**

Behavioral Development Behavioral Performance management – Behaviouristic Theory/ Longnitive/ Social Learning and Social Longnitive Theories - Laws of Behavior -Positive and Negative Reinforcement - Role of Financial / Non- Financial rewards - Behavioral Performance Management or OB Modification - Application Exercises.

UNIT – IV   **6 Hrs**

Personal and Managerial Effectiveness Time Management, Organizing Life, Burn Out and Stress Management, Career Identification and Career Development. Steps to Effectiveness: Proactive, put first things first, Think win-win, Understand than being to be understood, Synergy, Sharpen the saw.

UNIT – V   **6 Hrs**

Developing Soft Skills - Developing Leadership Potentials - Effective Communication skills, Development of positive thinking, Interpersonal relationships, Consensus building, Business and Social Etiquette.

TEXT BOOKS:

1. **Hurlock.B,Elizabeth,** "Personality Development", 2001, First Edition, TMH.

REFERENCE BOOKS:

1. **Shiv Khera,**"You can Win", 2002, Macmillan India Ltd.,
2. **Steven.R Covey,** "Seven Habits of Highly effective people". 2001, Franklin Convey.
3. **Fred Luthans,** "Organizational Behavior", Tenth edition, 2005, TMH.

E-REFERENCE:

1. http://www.nptel.iitm.ac.in/courses/110105029/pdf%20sahany/Module.6-23.pdf

I B.Sc. (CS)	**C++ AND MICROPROCESSOR LAB**	Sub. Code
SEMESTER II		**Hrs/Week - 4**
PRACTICAL II		**Credits - 2**

OBJECTIVE:

- The develop the programming skills in C++ and 8085 assembly language.

EXERCISES:

C++

1. Program using operators in 'C++'
2. Program using library functions.
3. Program using control structures
a. Using all types of IF statement.
b. Using While and do while loop
c. Using For loop.
d. Using Switch statement.
4. Program using one-dimensional and multi-dimensional array.
5. Program that manipulates strings.
6. Program using user defined functions.
7. Program for Function Overloading.
8. Program using structures.
9. Program using pointers.

MICROPROCESSOR

1. 8 Bit Addition and Subtraction.
2. 16 Bit Addition.
3. BCD Addition.
4. BCD Subtraction.
5. 8 Bit Multiplication.
6. BCD Multiplication.
7. 8 Bit Division.
8. Searching for an Element in an Array.
9. Sorting in Ascending and Descending Orders.
10. Finding Largest and Smallest Elements from an Array.
11. Reversing Array Elements.
12. Block Move.

II B.Sc. (CS)		Sub. Code
SEMESTER III	OBJECT ORIENTED PROGRAMMING USING C++	Hrs/Week - 5
PAPER V		Credits - 3

OBJECTIVE:

- To understand the basic concepts of object oriented programming using C++.

UNIT – I   **10 Hrs**

Classes & Objects : Class - Defining member functions , Friend function, Friend classes, Scope resolution operator, Static class members, Static data member, Static member function, Passing objects to function, Returning objects, Default Arguments.

UNIT – II   **10 Hrs**

Constructor & Destructor: Introduction, Types of constructors and Destructors - Operator Overloading - Rules for overloading operators - Overloading of unary and binary operators - Overloading using member and friend functions.

UNIT – III   **15 Hrs**

Inheritance: Base class Access control, Types of inheritance - Virtual base classes. Pointers- this pointer- pointer to derived classes - Virtual functions & Polymorphism: Virtual function, Pure Virtual functions. Managing formatted console I/O by ios members and manipulators.

UNIT – IV   **15 Hrs**

Working with files - Classes for file stream operations - Opening and closing a file - Detecting EOF - File modes for opening - Sequential I/O operations - Error handling during file operations - Command line arguments.

UNIT- V   **10 Hrs**

Templates: Class templates - Class templates with multiple parameters - Function templates - Function templates with multiple parameters - Overloading of template functions.

TEXT BOOKS:
1. **E. Balguruswamy**, "Object Oriented Programming with C++", Fourth edition, 2008, Tata McGraw Hill.
2. **K.R.Venugopal**, "Mastering C++", Second Edition, 1997, Tata McGraw Hill.

REFERENCE BOOKS:
1. **R. Lafore**, "Object Oriented Programming C++", Fourth Edition, 2002, Sams publishing.
2. **Herbert Schildt**, "The Complete Reference C++", Fourth Edition, 2004, McGraw-Hill.
3. **Saurav Sahay**, "Object Oriented Programming in C++", Second Edition, 2006, Oxford University Press.

4. **R Rajaram** , "Object Oriented Programming in C++" , Second Edition, 2007, New Age International Publishers
5. **Bjarne Stroustrup**, "The C++ Programming Language", Special Edition (Third Edition), 2001, Pearson Education.
6. **Deitel and Deitel**, "C++ How to program", Third Edition, 2001, Pearson Education Asia.

E- REFERENCES:

1. www.cplusplus.com/doc/tutorial
2. www.learncpp.com
3. Cplus.about.com

II B.Sc. (CS)		Sub. Code
SEMESTER III	DATA STRUCTURES AND ALGORITHMS	Hrs/Week - 5
PAPER VI		Credits - 3

OBJECTIVE:

- To understand the concept of data structures and its applications

UNIT – I   10 Hrs

Data Structures – Definition and Classification - Arrays – Array Operations – Representation of Arrays – Applications of Arrays. Stack – Operations on Stacks -Stack applications – Infix to Postfix notation and Evaluation of Postfix notation. Queues - Operations on the Queues - Circular queue – Dequeue - Priority queue - Applications of queue.

UNIT – II   10 Hrs

Introduction to the Linked List - Basic operations on linked list – Singly Linked Lists – Doubly Linked Lists – Circularly Linked Lists – Applications of Linked List – Addition of Polynomials – Linked Stacks – Linked Queues.

UNIT – III   15 Hrs

Trees - Basic Terminology - Binary Trees - Representation of Trees and Binary trees - Binary Tree Traversals – Threaded Binary Trees – Applications of Trees. Graphs – Basic Terminology – Representation of Graphs - Graph Traversals – Applications of Graphs – Minimum Cost Spanning tree and Dijkstra's Shortest Path.

UNIT – IV   10 Hrs

Definition, Structure and Properties of algorithm – Analysis of algorithm – Efficiency of algorithms – Time Complexity of algorithm - Asymptotic Notations – Searching Techniques – Linear Search – Binary Search – Fibonacci Search.

UNIT – V   15 Hrs

Sorting techniques – Bubble Sort, Selection Sort, Quick Sort, Merge Sort, and Insertion Sort – Introduction to Hashing – Hash table structure – Hash Functions – Linear Open Addressing – Chaining.

TEXT BOOKS:

1. **S. Sahni & E. Horowitz**, "Fundamentals of Data Structure", Second Edition, 1999, Galgotia Publications.
2. **Richard F Gilberg Behrouz A. Forouzan, Thomson**, "Data Structure – A Pseudocode Approach with C", First Edition, 2005, University of California.

3. **Seymour Lipschutz**, "Schaum's Outline of Theory and Problems of Data structure", Second Edition, Tata McGraw-Hill.

4. **Alfred V.Aho, John E.Hopcraft, Jeffrey D.Ullman**, "Data Structures and Algorithms", 2009, Addison-Wesley.

REFERENCE BOOKS:
1. **G.A. Vijayalakshmi Pai**, "Data structures and Algorithms- Concepts, Techniques and Applications", First Edition, 2011, Tata McGraw-Hill.
2. **Dr. A. Chitra**, "Data Structures", 2009, Vijay Nicole Imprints Private Limited.

E- REFERENCES:
1. http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT-%20Guwahati/data_str_algo/frameset.htm
2. http://www.personal.kent.edu/~rmuhamma/Algorithms/algorithm.html
3. en.wikibooks.org/wiki/Data_structures

II B.Sc. (CS)		Sub. Code
SEMESTER III	**OOPS AND DATA STRUCTURES LAB USING C++**	**Hrs/Week - 4**
PRACTICAL III		**Credits - 2**

OBJECTIVE:

- To implement object oriented programming concepts and data structures in C++.

EXERCISES:

OOPS

1. Program using classes and objects.
2. Program using constructor and destructor.
3. Program using polymorphism.
4. Program for various types of inheritance.
5. Program using operator overloading.
6. Program using object pointers.
7. Program using virtual functions.
8. Program using files.
9. Program using class template.
10. Program using function template.

DATA STRUCTURES

1. Program for Stack.
2. Program for Queue.
3. Program for Linked List.
4. Program for tree traversals.
5. Program for shortest path technique.
6. Program for sorting techniques.
7. Program for searching techniques.

II B.Sc. (CS)	JAVA PROGRAMMING	Sub. Code
SEMESTER IV		Hrs/Week - 4
PAPER VII		Credits - 3

OBJECTIVE:

- To understand the concepts and features of Java.

UNIT – I   **10 Hrs**

Introduction to Java - Features of Java - Object Oriented Concepts - Lexical Issues - Data Types - Variables - Arrays - Operators - Control Statements.

UNIT – II   **15 Hrs**

Classes - Objects - Constructors - Overloading method - Access Control- Static and Final methods - Inner Classes - String Objects - String Class -String Buffer - Char Array - Java Utilities - Inheritance - Overriding methods - Using super-Abstract class.

UNIT – III   **10 Hrs**

Packages - Access Protection - Importing Packages - interfaces - Exception Handling - Throw and Throws - Thread - Synchronization - Messaging - Runnable Interface - Inter thread Communication - Deadlock - Suspending, Resuming and stopping threads - Multithreading.

UNIT – IV   **10 Hrs**

I/O Streams: Stream classes – Byte stream classes - Character stream classes - File Streams – Using File class – I/O exceptions – Creation of file – Reading or writing characters/bytes – Random access files.

UNIT – V   **15 Hrs**

Applets – Preparing to write applets – Building Applet code – Applet life cycle – Applet tag – Passing parameters to Applets - Working with windows using AWT Classes - AWT Controls - Layout Managers and Menus.

TEXT BOOKS:
1. **E.Balagurusamy**, "Programming with Java", Fourth Edition, 2010, Tata McGraw- Hill.
2. **P Radha Krishna**, "Object Oriented Programming through Java", Second Edition, 2007, Universities Press.

REFERENCE BOOKS:
1. **K. Arnold and J. Gosling**, "The Java Programming Language", Second Edition, 1996, Addison Wesley.
2. **P. Naughton and H. Schildt**, "Java2 (The Complete Reference)", Eight Edition, 2005, Tata McGraw-Hill.

3. **Kathy Sierra and Bert Bates**, "Head First Java", Second Edition, 2003, Oreilly.

E- REFERENCES:

1. www.tutorialspoint.com/java/java-quick-guide.htm
2. www.ntu.edu.sg/home/ehchua/programming/java/J3a_OOPBasics.html
3. www.tutorialspoint.com/java/java_overview.htm

II B.Sc. (CS)		Sub. Code
SEMESTER IV	COMPUTER ARCHITECTURE	Hrs/Week - 4
PAPER VIII ELECTIVE I		Credits - 3

OBJECTIVE:

- To understand the concept of digital components and its architecture.

UNIT – I   **10 Hrs**

Digital Components: Decoders-Multiplexers-Registers-Binary Counters. Basic Computer Organization and Design: Instruction codes – Computer Registers -Computer Instructions – Timing and Control – Instruction Cycle – Input / Output and Interrupt.

UNIT – II   **10 Hrs**

Central Processing Unit – General Register Organization – Stack Organization – Instruction format – Addressing modes – Data transfer and Manipulation – Program Control –Reduced Instruction Set Computer (RISC). Micro programmed Control – Control Memory – Address Sequencing – Micro Instruction Formats.

UNIT – III   **15 Hrs**

Computer Arithmetic: Addition and Subtraction–Multiplication Algorithms – Division Algorithm – Floating Point Arithmetic Operations.

UNIT – IV   **15 Hrs**

Input-Output Organization: Peripheral device – Input-Output Interface – Asynchronous data transfer – Modes of Transfer – Priority Interrupt - Direct Memory Access - Input Output Processor – Serial Communication.

UNIT – V   **15 Hrs**

Memory Organization: Memory Hierarchy-Volatile and non volatile memory – RAM - ROM - Auxiliary memory- Associative memory – Cache Memory – Virtual Memory- Memory Management Hardware.

TEXT BOOK:

1. **M. Morris Mano,** "Computer System Architecture", Third Edition, 1993, PHI.

REFERENCE BOOKS:

1. **W. Stallings,** "Computer Organization and Architecture", Sixth Edition, 2003, PHI.
2. **Carl Hamacher V.,Zvonko G.Vranesic, Safwat G. Zaky**, "Computer organization" Fifth Edition, 2001, Tata McGraw-Hill.

3. **Heuring V.P., Jordan H.F.**, "Computer System Design and Architecture", Second Edition, 2001, Addison Wesley.

E- REFERENCES:

1. www.csi.ucd.ie/staff/jcarthy/home/alp/alp6.html
2. www.cs.iastate.edu
3. Ece.eng.wayne.edu/~gchen/ece4680/lecture-notes/lecture-notes.html

II B.Sc.(CS)		Sub. Code
SEMESTER IV	**CLIENT/ SERVER TECHNOLOGY**	Hrs/Week - 4
PAPER-VIII ELECTIVE I		Credits - 3

OBJECTIVE:

- To understand the concepts of server computing and its technology.

UNIT – I   **10 Hrs**

Client/Server Computing – Advantages of Client/Server Computing – Technology - Revolution - Connectivity – Ways to improve Performance – How to reduce network Traffic

UNIT – II   **10 Hrs**

Components of Client/Server Applications – The Client: Role of a Client – Client Services – Request for Service. Components of Client/Server Applications – The Server: The Role of a Server – Server Functionality in Detail – The Network Operating System – What are the Available Platforms – The Server Operating system.

UNIT – III   **15 Hrs**

Components of Client/Server Applications – Connectivity: Open System Interconnect – Communications Interface Technology – Interprocess communication – WAN Technologies.

UNIT – IV   **15 Hrs**

Components of Client/Server Applications–Software: Factors Driving demand for application software development – Rising Technology Staff costs – Need to improve Technology – Need for Common Interface across Platforms – Client/Server System Development Methodology. Components of Client/Server Applications – Hardware:Hadware/Network Acquisition – PC-Level Processing Units – Machintosh, notebooks, Pen – UNIX Workstation – x-terminals – Disk, Tape, Optical Disks, NIC and UPS.

UNIT – V   **10hrs**

Components of Client/Server applications–Service and Support: System Administration. The Future of Client/Server Computing: Enabling Technologies – Transformational Systems.

TEXT BOOK:
   1. **Patric Smith, Steve Guenferich**, "CLIENT/SERVER COMPUTING**",** Second Edition, Prentice Hall of India Private Limited, New Delhi (Chapters 1-8 & 10)

E- REFERENCES:
   1. http://arts.nprcolleges.org/e%20content/commerce/Inroduction%20to%20Client%20Server%20computer-%20TCA8C23.pdf

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II B.Sc.,(CS)	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS	Sub. Code
SEMESTER IV		Hrs/Week - 4
PAPER VIII ELECTIVE I		Credits - 3

OBJECTIVE:

- To understand the general concepts of AI programming languages.

UNIT – I   **10 Hrs**

Introduction of Artificial Intelligence: Overview of Artificial Intelligence – Knowledge: General Concepts – Lisp and other AI Programming Languages.

UNIT – II   **10 Hrs**

Knowledge Representation – Formalized Symbolic logics – Dealing with Inconsistencies and Uncertainties – Probabilistic Reasoning - Structured Knowledge : Graphs, Frames and Related Structures – Object – Oriented Representations.

UNIT – III   **15 Hrs**

Knowledge Organization and Manipulation: Search and Control Strategies – Matching Techniques – Knowledge Organization and Management

UNIT – IV   **15 Hrs**

Perception and Communication: Natural Language Processing – Pattern Recognition – Visual Image Understanding.

UNIT – V   **10 Hrs**

Expert System Architectures: Rule-Based System Architectures – Nonproduction System Architectures – Dealing with Uncertainty – Knowledge Acquisition and Validation – Knowledge system Building Tools.

TEXT BOOK:

1. **Dan W. Patterson**," Introduction to Artificial Intelligence and Expert System", 2005, PHI Learning.

E- REFERENCES:

1. http://www.ddegjust.ac.in/studymaterial/mca-5/mca-402.pdf

II B.Sc. (CS)		Sub. Code
SEMESTER IV	**JAVA PROGRAMMING LAB**	Hrs/Week - 4
PRACTICAL IV		Credits - 2

OBJECTIVE:

- To apply the Java concepts through various applications.

EXERCISES:

JAVA

1. Program using Random Class.
2. Program using Vectors.
3. Program using Calendar Class.
4. Program using interface.
5. Programming using Inheritance.
6. String Manipulation.
7. Program using Exception Handling.
8. Program using packages.
9. Program using Files.
10. Implementing Thread based applications
11. Program using buffered reader.

APPLETS

12. Working with Colors and Fonts.
13. Drawing various shapes using Graphical statements.
14. Design a simple calculator.
15. Usage of AWT components in suitable applications.

III B.Sc. (CS)		Sub. Code
SEMESTER V	**OPERATING SYSTEMS**	Hrs/Week - 5
PAPER IX		Credits - 4

OBJECTIVE:

- This paper is intended to make the student aware of all concepts related to operating system.

UNIT – I   **15 Hrs**

Introduction- views and goals **-** Operating-System Services - User and Operating-System interface - System Call- Types of System Calls – Operating System Design and Implementation - Operating-System Structure. Process Management: Process concept- Process Scheduling - Operations on Processes- Interprocess Communication .Threads: Types of threads

UNIT – II   **15 Hrs**

Process Scheduling: Basic Concepts- Scheduling Criteria - Scheduling Algorithms Multiple-Processor Scheduling –CPU Scheduling .Synchronization: The Critical-Section Problem Synchronization Hardware –Semaphores- Classic Problem of Synchronization.

UNIT –III   **15 Hrs**

Deadlocks: Deadlock Characterization - Methods for Handling Deadlocks- Deadlock Prevention- Deadlock Avoidance - Deadlock Detection - Recovery from Deadlock.

UNIT –IV   **15Hrs**

Memory-Management Strategies: Swapping - Contiguous Memory Allocation –Segmentation-Paging - Structure of the Page Table . Virtual-Memory Management: Demand Paging - Page Replacement - Allocation of Frames -Thrashing .

UNIT –V   **15 Hrs**

Storage Management: File System**-** File Concept - Access Methods- Directory and Disk Structure -File Sharing - Protection .Allocation Methods - Free-Space Management - Efficiency and Performance – Recovery.

TEXT BOOKS:

1. **A. Silberschatz P.B.Galvin, Gange**. "Operating System Concepts", Ninth Edition, 2013, Addison Wesley Publishing Co.

REFERENCE BOOKS:

1. **H.M. Deitel**, "An Introduction to Operating System", Second Edition, Addison Wesley.

E-REFERENCES:

1. http://www.cs.kent.edu/~farrell/osf03/oldnotes/
2. https://it325blog.files.wordpress.com/2012/09/operating-system-concepts-7-th-edition.pdf

III B.Sc. (CS)		Sub. Code
SEMESTER V	DATABASE MANAGEMENT SYSTEMS	Hrs/Week - 5
PAPER X		Credits - 4

OBJECTIVE:

- To understand the concepts related to Database Management System, SQL and PL/SQL.

UNIT – I   **15 Hrs**

Introduction - Database System - Characteristics of Database Management Systems - Architecture of Database Management Systems - Database Models - System Development Life Cycle - Entity Relationship Model

UNIT – II   **15 Hrs**

Introduction to Relational Database Model - Structure of Relational Model – Keys - Relational Algebra - Normalization: Functional Dependency - First Normal form - Second Normal Form- Third Normal form - Boyce-Codd Normal Form - Fourth Normal Form.

UNIT – III   **15 Hrs**

SQL: Introduction-Data Retrieval - Single row function - Group function - Set Function - Sub query - Joins. Data Manipulation Language: Insert, Update and Delete Statements - Transaction Control Language – View – Sequence – Synonym – Index - Defining Constraints.

UNIT – IV   **15 Hrs**

PL/SQL: Introduction-PL/SQL Basic-Character Set- PL/SQL Structure-SQL Cursor-Subprograms-Functions-Procedures.

UNIT –V   **15 Hrs**

Exception Handler Introduction - Predefined Exception - User Defined Exception – Triggers - Implicit and Explicit Cursors - Loops in Explicit Cursor.

TEXT BOOK:

1. **Pranab Kumar Das Gupta and P. Radha Krishnan,** "Database Management System Oracle SQL and PL/SQL", Second Edition, 2013, PHI Learning Private Limited.

REFERENCE BOOKS:

1. **Ramez Elmasri and Shamkant B. Navathe**, "Fundamentals of Database Systems", Fifth Edition, 2007, Pearson Publications.

2. **Abraham Silberschatz, Henry Korth, S. Sudarshan**, "Database System Concepts", Sixth Edition, 2010, Mc-Graw Hill Education.

E-REFERENCE:

1. http://www.amazon.in/DATABASE-MANAGEMENT-SYSTEM-ORACLE-SQL-ebook/dp/B00LPGBWZ0#reader_B00LPGBWZ0

III B.Sc. (CS)		Sub. Code
SEMESTER V	**COMPUTER GRAPHICS**	Hrs/Week - 5
PAPER XI		Credits - 4

OBJECTIVE:

- To enable the students to learn about the working of input output devices.
- To learn the concepts of 2D and 3D transformation models and generation algorithms.

UNIT – I   15 Hrs

Introduction - Overview of graphics systems – Video display devices, Raster scan systems, Random scan systems. Output primitives - points and lines, line drawing algorithms (DDA) - Bresenham's –Interactive input devices -Filled area primitives.

UNIT – II   15 Hrs

Two dimensional Geometric Transformations: Matrix representations and homogeneous coordinates, composite transformations. Two dimensional viewing: Window-to-viewport coordinate transformation-Two dimensional viewing functions- polygon clipping algorithms.

UNIT – III   15 Hrs

3D concepts: 3D object representations -Polygon surfaces - Curved Lines and surfaces- Spline representations - Bezier curves and surfaces - B-Spline curves and surfaces.

UNIT – IV   15 Hrs

Three dimensional geometric and modeling transformations: Translation, Rotation, Scaling and Composite transformations. Three dimensional viewing: Viewing pipeline- Viewing coordinates- Projections- Clipping- Visible surface detection methods.

UNIT – V   15 Hrs

Intuitive color concepts - RGB color model - YIQ color model - CMY color model -HSV color model - HLS color model- Color selection.

TEXT BOOK:

1. **Donald Hearn & M. Paulin Baker**, "Computer Graphics", Second Edition, 2003, Pearson Education.

REFERENCE BOOKS:

1. **W.M. Newman and R.F.Sproull**, "Principles of Interactive Computer Graphics", Tata McGraw Hill International Edition.

2. **James D. Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes**, "Computer Graphics-Principles and Practice", Second Edition, 2007, Pearson Education.

E-REFERENCES:

1. http://www.uptu.ac.in/pdf/sub_ecs_504_30sep14.pdf

III B.Sc. (CS)		Sub. Code
SEMESTER V	LINUX AND SHELL PROGRAMMING	Hrs/Week - 5
PAPER XII ELECTIVE II		Credits - 4

OBJECTIVE:

- To understand about the basic concepts of Linux Operating System and its commands.

UNIT – I   **15 Hrs**

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories.- Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels.

UNIT – II   **15 Hrs**

Essential Linux commands Understanding shells, Processes in linux-process fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort,touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe & vim editor.

UNIT – III   **15 Hrs**

System administration Common administrative tasks, identifying administrative files – configuratinn and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, reconfiguration hardware with kudzu, installaing and removing packages with rpm command. Configure X-windows desktop-redhat-config-Xfree86, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical interfaces, changing X settings.

UNIT – IV   **15 Hrs**

Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional

and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

UNIT – V   **15 Hrs**

Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Filter using regular expressions – grep, egrep, and sed. awk programming – report printing with awk.

TEXT BOOK:

1. **Sumitabha Das,** "UNIX- Concepts & Application", Fourth Edition, 2008, Tata McGraw Hill Publications.
2. **Cristopher Negus**, "Red Hat Linux 9 Bible", 2003, IDG Books India Ltd.

REFERENCE BOOKS:

1. **Graham Glass & King Ables,** "UNIX for programmers and users", Third Edition, 2003, Pearson Education India.

E-REFERENCES:

1. http://linux-training.be/files/books/LinuxFun.pdf
2. http://www.rpi.edu/dept/arc/training/shell/slides.pdf
3. http://www.kau.edu.sa/Files/830/Files/60761_Linux.pdf
4. http://www.itu.dk/~bhasjana/UNIX/Shell%20Programming%20in%2024%20Hours.pdf

III B.Sc. (CS)		Sub. Code
SEMESTER V		Hrs/Week - 5
PAPER XII	ADVANCED JAVA PROGRAMMING	
ELECTIVE II		Credits - 4

OBJECTIVE:

- This course provides an in-depth knowledge of Advanced Java language and programming.
- Implementing Java components and practicing RMI,BEAN and JDBC.

UNIT – I   **15 Hrs**

Servlet Overview: server side includes-Creating an HTML login screen-Using the Servlet Context -performing URL Redirection: Using Request Dispatcher -Using sendRedirect -Session tracking with servlets –Cookies-URL rewriting -Hidden fields -session-tracking API with HttpSession object –Listener-Filters-Deploying servlets -Servlet listener elements -Servlet filter elements -Applet-servlet communication- JDBC connectivity

UNIT – II   **15 Hrs**

JSP –Introduction JSP-Examining MVC and JSP -JSP scripting elements & directives-Working with variables scopes-Error Pages - using Java Beans in JSP Working with Java Mail-Understanding Protocols in Java mail-Components-Java mail API-Integrating into J2EE-Understanding Java Messaging Services-Transactions.

UNIT – III   **15 Hrs**

RMI – Overview – Developing applications with RMI:Declaring & Implementing remote interfaces-stubs & skeletons, Registering remote objects, writing RMI clients –Pushing data from RMI Servlet – RMI over Inter-ORB Protocol

UNIT – IV   **15 Hrs**

Java Beans: Advantages – BDK - Developing Beans – Notable beans –Application Builder tool- JAR files-Introspection-Bound Properties-Persistence-customizers - Java Beans API.

UNIT – V   **15 Hrs**

EJB: EJB Component Model -Reviewing Roles, Relationships, and Responsibilities: The deployment descriptor -The bean provider -The server/container provider -The application assembler -The EJB deployer-The system administrator -Entity beans -Session beans.

TEXT BOOK:

1. **McGovern,R. Adatia,Y. Fain**, " J2EE 1.4 Bible" 2003, Wiley-dreamtech India Pvt. Ltd, New Delhi.

2. **Schildt**, "Java 2 Complete Reference", Fifth Edition, 2002, Tata McGraw-Hill, New Delhi.

REFERENCE BOOKS:

1. **K. Moss**, "Java Servlets", Second edition, 1999, Tata McGraw Hill, New Delhi.
2. **D. R.Callaway**, "Inside Servlets", 1999, Addison Wesley, Boston
3. **Joseph O'Neil**, "Java Beans from the Ground Up" 1998, Tata McGraw Hill, New Delhi.
4. **TomValesky,** Enterprise JavaBeans, Addison Wesley.

E-REFERENCES:

1. http://www.tutorialspoint.com/servlets/
2. http://www.javatpoint.com/jsp-tutorial
3. http://www.javatpoint.com/RMI
4. www.cis.upenn.edu/~bcpierce/courses/629/papers/Java-tutorial/beans/
5. www.tutorialspoint.com/ejb

III B.Sc. (CS)		Sub. Code
SEMESTER V	VISUAL PROGRAMMING	Hrs/Week - 5
PAPER XII ELECTIVE II		Credits - 4

OBJECTIVE:

• To understand the concepts of Visual Basic.

UNIT – I   **15 Hrs**

Introduction to Visual Basic-introduction Graphical User Interface (GUI), Programming Language (Procedural, Object Oriented, Event Driven), The Visual Basic Environment- VB Controls Textboxes, Frames, Check Boxes , Option Buttons, List Boxes & Combo Boxes, Images, Setting a Border & Styles, The Shape Control, The line Control, Working with multiple controls and their properties, Coding for controls.

UNIT – II   **15 Hrs**

Variables, Constants, and Calculations-Variables, Variables Public, Private, Static, Constants, Data Types, Naming -rules/conventions, Constants, Named & intrinsic, Declaring variables, Scope of variables, Val Function, Arithmetic Operations, Formatting Data-handling Strings - Decision & Conditions- If Statement, If then-else Statement, Nested If Statements, Do/Loops, For/Next Loops, Case Structure , Displaying Message in Message Box- Using Call Statement to call a procedure.

UNIT – III   **15 Hrs**

Menus, Sub-Procedures and functions , Using common dialog box, Creating a new sub-procedure, Passing Variables to Procedures, Passing Argument ByVal or ByRef, Writing a Function Procedure, Multiple Forms -Creating , adding, removing Forms in project - Arrays Single-Dimension Arrays, Initializing an Array using for Each, Two dimensional arrays.

UNIT – IV   **15 Hrs**

Creating the database files for use by Visual Basic (Using MS-Access), Using the ActiveX Data Control (ADO), navigating the database in code using recordset object, using list boxes & combo boxes as data bound controls, updating a database file (adding, deleting records) - Displaying data in grids (grid control, properties of grid) , searching for a specific record (findfirst, findnext, findlast, findprevious), seek method, working with database fields

UNIT – V   **15 Hrs**

Trapping Program Errors, The Err Object, Dialog Boxes- COM/OLE - automation - DLL Servers - OLE Drag and Drop.

TEXT BOOKS:

1. **Gary Cornell**, "Visual Basic 6 from the Ground up", First Edition, 1999, Tata McGraw-Hill.
2. **Steven Holzner**, "Visual Basic 6 Black Book", Second Edition, 1999, Oreilly.

REFERENCE BOOKS:

1. **Noel Jerke**, "Visual Basic 6 (The Complete Reference)", Second Edition, 1999, Tata McGraw-Hill.
2. **Overland Brian**, "Visual Basic 6 in Plain English", Third Edition, 1999, John Wiley.

E-REFERENCES:

1. www.tutorialspoint.com/listtutorials/visual-basic/

III B.Sc. (CS)		Sub. Code
SEMESTER V	RDBMS LAB	Hrs/Week - 5
PRACTICAL V		Credits - 3

OBJECTIVE:

• To make the student aware of the Back-End tool.

EXERCISES:

1. DDL commands.
2. Specifying constraints-primary key, foreign key, unique, check, not null.
3. DML commands.
4. Joins.
5. Sub queries.
6. Creation of simple PL/SQL block using control constructs.
7. Creation of PL/SQL blocks using exceptional handlers.
8. PL/SQL program using implicit and explicit cursor.
9. PL/SQL program using procedures.
10. PL/SQL program using triggers.
11. Data Manipulation using PL/SQL.

III B.Sc. (CS)		Sub. Code
SEMESTER V	LINUX AND SHELL PROGRAMMING	Hrs/Week - 5
PRACTICAL VI ELECTIVE II		Credits - 4

OBJECTIVE:

- To make the student aware of the commands of Linux OS.

EXERCISES:

1. Check whether the given number is prime or not.
2. Find the biggest of given two numbers.
3. Write a program to check the given number is odd or even.
4. Write a program to generate Fibonacci Series.
5. Write a program to prepare electric bill for domestic consumers.
6. Write a program to display the result PASS or FAIL using the in format given below: Student Name, Student Reg. No., Mark1, Mark2, Mark3, and Mark4. The minimum pass for each subject is 50.
7. Write a program to prepare a Payroll with Basic Pay, DA, Allowances, PF and Gross Pay. Using Case Statement, Write a program to check the files ending with vowels.
8. Write a single program to sort the names and numbers in alphabetical, ascending and descending order.
9. Write a menu driven program to print Biodata for five persons.

III B.Sc. (CS)		Sub. Code
SEMESTER V	**ADVANCED JAVA PROGRAMMING**	Hrs/Week - 5
PRACTICAL VI ELECTIVE II		Credits - 4

OBJECTIVE:

- To improve the programming skills of the students with respect to advance concepts of Java and to make the students to cop up with the latest programming concepts.

EXERCISES:

1. HTML to Servlet Applications
2. Applet to Servlet Communication
3. Designing online applications with JSP
4. Creating JSP program using JavaBeans
5. Working with Enterprise JavaBeans
6. Performing Java Database Connectivity.
7. Creating Web services with RMI.
8. Creating and Sending Email with Java
9. Building web applications

III B.Sc. (CS)		Sub. Code
SEMESTER V	VISUAL PROGRAMMING LAB	Hrs/Week - 5
PRACTICAL VI ELECTIVE II		Credits - 3

OBJECTIVE:

- To improve the programming skills of the students with respect to advance concepts of Visual Basic.

EXERCISES:

1. Building simple applications with VB (Calculator and String Functions)
2. Working with intrinsic controls (Radio buttons, Check boxes , Picture boxes, Timer and Shape control)
3. Application using MDI form
4. Application using menus
5. Application using Dialog Boxes
6. Application using Functions(pass by value and Reference) and Procedures
7. Create database and performing the operations given below using a Menu
8. Driven program: (i) Insertion (ii) Deletion (iii) Modification (iv) Generating reports (Simple) for the following Systems using any RDBMS package:
   a) Payroll Processing
   b) Mark sheet Processing
   c) Library information system
   d) Income tax processing system
   e) Electricity bill preparation system
   f) Telephone directory maintenance.

III B.Sc. (CS)	DATA COMMUNICATIONS AND NETWORKING	Sub. Code
SEMESTER VI		Hrs/Week - 5
PAPER XIII		Credits - 4

OBJECTIVE:

- To make students understand the concepts of Networking.

UNIT – I   **15 Hrs**

Data Communication – Networks - The Internet - Protocols and Standards - OSI model - Layers in the OSI model - TCP/IP Protocol suite - Addressing.

UNIT – II   **15 Hrs**

Signals : Analog and Digital – Periodic Analog Signals - Digital-Transmission Impairment - Data Rate Limits - Performance - Digital Transmission - Digital-to-Digital Conversion - Analog-to-Digital Conversion - Transmission Modes - Analog Transmission -Digital-to-Analog Conversion - Analog-to-Analog Conversion.

UNIT – III   **15 Hrs**

Bandwidth Utilization: Multiplexing: Frequency Division, Wavelength-Division, Synchronous-time Division, Statistical Time Division - Transmission Media: Guided, Unguided

UNIT – IV   **15 Hrs**

Switching - Circuit Switched, Datagram, Virtual Circuit Networks - Dial-up modems - Digital Subscriber Line - Error Detection and Correction: Types of Errors - Block coding - Cyclic codes - Checksum - Data Link Control - Framing - Flow and Error Control - Noiseless, Noisy channels - Network Layer - Logical Addressing - IPv4,IPv6 addresses - Routing - Unicast, Multicast Routing Protocol.

UNIT – V   **15 Hrs**

Transport Layer - Process-To-Process Delivery – UDP - TCP-Congestion Control -Quality of Services - Application Layer - Domain Name Space - Distribution of Name Space -DNS in the internet - Electronic mail – FTP – Security - Symmetric-key, Asymmetric-key Cryptography - Security Services - Digital Signature.

TEXT BOOK:

1. **Behrouz and Forouzan**, "Introduction to Data Communication and Networking", Fourth Edition, 2001, TMH.

REFERENCE BOOK:

1. **Behrouz and Forouzan**, "Data Communication and Networking", Third Edition, 2006, TMH.

E-REFERENCE:

1. http://117.55.241.6/library/E-books/Data%20communication%20&%20Networking%20by %20Forouzon.pdf

III B.Sc. (CS)		Sub. Code
SEMESTER VI	WEB PROGRAMMING	Hrs/Week - 5
PAPER XIV		Credits - 4

OBJECTIVE:

- To make students aware of the concepts in HTML, Java Script and ASP.NET.

UNIT – I   **15 Hrs**

Introduction to HTML - Anchor Tag – Hyperlink - Head and Body Section – Heading - Horizontal Ruler – Paragraphs – Tags - Images and Picture – Lists – Tables – Frames - Forms and forms elements - DHTML and Style sheets - Defining styles - Elements of style - Linking a style sheet to a html documents - Inline style - External style sheets - Multiple styles - Web page designing.

UNIT – II   **15 Hrs**

Introduction to Java script - Advantage of JavaScript - Data type - Variable – Array -Operator and Expression - Control and looping Constructs - Functions - Dialog Boxes - JavaScript Document Object Model - Event Handling - Form Object - Built in Object - User Defined Object- Cookies.

UNIT – III   **15 Hrs**

Overview of ASP.Net Framework - Page Structure - Compiler Directives -Namespace - Understanding ASP.Net Control - ASP.Net Pages - Standard Controls: Displaying information - Accepting user input - Submitting form data - Displaying images - HyperLink control

UNIT – IV   **15 Hrs**

Validation Control - Rich Controls: AdRotator, Calender control - Overview of Data Access:Data Bound Control - Data Source Control - Data Binding - SqlDataSource control - OleDb Connection - OleDb Command - OleDb Transaction - Data Adapter - Data Reader - DataSet.

UNIT – V   **15 Hrs**

List Control: DropDownList – RadioButtonList – ListBoxCheckBoxList – BulletedList - GridView Control – Repeater - DataList Control - Building Data Access Component with ADO.NET - Maintaining Application State: Browser Cookies - Session State, Web Services.

TEXT BOOKS:

1. **Ivan Bayross**, "Web Enabled Commercial Application Development using HTML, JavaScript, DHTML and PHP", Fourth Edition, 2010, BPB Publications. (Unit I, II).

2. **Stephen Walther, Kevin Hoffman and Nate Dudek**, "ASP.Net 4 Unleashed", 2011, Pearson Education.(Unit III, IV and V)

REFERENCE BOOKS:
1. **Harvey M. Deitel, Paul J. Deitel, Tem R. Nieto**, "Internet & World Wide Web – How to program", Third Edition, 2002, Prentice Hall.
2. **Greg Buczek**,"ASP.NET Developer's guide" , 2002, Tata McGraw-Hill.

E-REFERENCE:
1. http://books.google.co.in/books?id=BrASwbtAGGUC&pg=PA69&source=gbs_selected_pages&cad=2#v=onepage&q&f=false

III B.Sc. (CS)		Sub. Code
SEMESTER VI	**SOFTWARE ENGINEERING**	Hrs/Week - 5
PAPER XV		Credits - 4

OBJECTIVE:

- To make students aware of the various stages in the development of Software.

UNIT – I **15 Hrs**

The Nature of Software - Definition: Software, Software Engineering - Prescriptive Process Models - Prescriptive Process Models - The Waterfall Model - Incremental Process Model - Evolutionary Process Models - Concurrent Models

UNIT – II **15 Hrs**

Requirements Analysis -Scenario-Based Modeling - UML Models That Supplement the Use Case - Data Modeling Concepts - Class-Based Modeling - Requirements Modeling Strategies - Flow-Oriented Modeling - Creating a Behavioral Model

UNIT – III **15 Hrs**

The Design Process - Design Concepts - The Design Model - Designing Class-Based Components: Basic Design Principles - Component-Level Design Guidelines - Cohesion – Coupling - Designing Traditional Components - Graphical Design Notation - Tabular Design Notation - Program Design Language

UNIT – IV **15 Hrs**

Elements of Software Quality Assurance - SQA Tasks, goals, and metrics - Software Testing Strategies - Unit Testing - Integration Testing - Validation Testing - Alpha and Beta Testing - System Testing – The Debugging Process - White-Box Testing - Basis Path Testing - Control Structure Testing - Black-Box Testing

UNIT – V **15 Hrs**

Software Configuration Management - The SCM Repository - The SCM Process - Risk Management - Software Risks - Risk Identification - Risk Projection - Risk Refinement - Risk Mitigation, Monitoring, and Management - The RMMM Plan - Software Maintenance - Software Supportability – Software Reengineering - Reverse Engineering

TEXT BOOKS:

1. **Roger S. Pressman,** "Software Engineering - A practitioner's Approach", 7th edition, 2001, Tata McGraw-Hill International Edition.

REFERENCE BOOKS:

1. **Ian Sommerville,** "Software Engineering", 6th edition, 2000, Pearson education Asia,.
2. **Richard E. Fairley,** "Software Engineering Concepts", 2002, Tata McGraw-Hill edition.

E-REFERENCE:

1. http://ceit.aut.ac.ir/~91131079/SE2/SE2%20Website/Lecture%20Slides.html

III B.Sc. (CS)		Sub. Code
SEMESTER VI	INTRODUCTION TO PHP	Hrs/Week - 5
PAPER XVI ELECTIVE III		Credits - 4

OBJECTIVE:

- To make students understand the basic concepts of PHP programming.

UNIT – I **15 Hrs**

Introducing PHP – Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.

UNIT – II **15 Hrs**

Controlling Program Flow: Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

UNIT – III **15 Hrs**

Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.

UNIT – IV **15 Hrs**

Using Functions and Classes: Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts. Working with Files and Directories: Reading Files-Writing Files-Processing Directories – Cookies – Session Management.

UNIT – V **15 Hrs**

Working MySQL with PHP-database connectivity- Usage of MYSQL commands in PHP - Processing result sets of queries- Validating user input through Database layer and Application layer- Formatting query output with Character, Numeric, Date and time.

TEXT BOOKS:

1. **Vikram Vaswani,** "PHP A Beginner's Guide", Tata McGraw-Hill
2. **Robin Nixon O'Reilly**, "PHP, MySQL, and JavaScript: A Step-By-Step Guide to Creating Dynamic Websites by Media", First edition

REFERNCE BOOKS:

1. **Rasmus Lerdorf, Kevin Tatroe** "Programming PHP", O'Reilly, ISBN 1565926102.

2. **Leon Atkinson** "Core PHP Programming", Prentice Hall, ISBN 0130463469.
3. **W. Jason Gilmore,** "Beginning PHP5 and MySQL: From Novice to Professional", 2004, Apress, ISBN: 1-893115-51-8
4. **Steven Holzner**, "The PHP Complete Reference", Tata McGraw-Hill Edition.
5. **Steven Holzer**, "Spring into PHP5", Tata McCraw Hill Edition

E-REFERENCES:

1. www.tutorialspoint.com/php/
2. http://www.w3schools.com/php/

III B.Sc. (CS)		Sub. Code
SEMESTER VI	**MULTIMEDIA SYSTEMS**	Hrs/Week - 5
PAPER XVI ELECTIVE III		Credits - 4

OBJECTIVE:

* To make students understand the concept of Multimedia Systems.

UNIT – I   **15 Hrs**

Multimedia Definition – Use of Multimedia – Delivering Multimedia – Text: About Fonts and Faces – Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext.

UNIT – II   **15 Hrs**

Images: Plan Approach – Organize Tools – Configure Computer Workspace – Making Still Images – Color – Image File Formats. Sound: The Power of Sound – Digital Audio – MIDI Audio – MIDI vs. Digital Audio – Multimedia System Sounds – Audio File Formats.

UNIT – III   **15 Hrs**

Animation: The Power of Motion – Principles of Animation – Animation by Computer – Making Animations that Work. Video: Using Video – Working with Video and Displays – Digital Video Containers – Obtaining Video Clips – Shooting and Editing Video.

UNIT – IV   **15 Hrs**

Making Multimedia: The Stage of Multimedia Project – The Intangible Needs – The Hardware Needs: Memory and Storage Devices – I/O Devices. The Software Needs: Basic Tools. An Authoring Systems Needs: Types - Time Based – Icon Based. Multimedia Production Team.

UNIT – V   **15 Hrs**

Planning and Costing: The Process of Making Multimedia – Scheduling – Estimating – RFPs and Bid Proposals. Designing and Producing – Content and Talent: Acquiring Content – Acquiring Talent.

TEXT BOOKS:

1. **Tay Vaughan**, "Multimedia: Making It Work", Eighth Edition, 2011, Tata McGraw-Hill.
2. **S.Gokul**, "Multimedia Magic", Revised and updated Second Edition, 2008, BPB.

REFERENCE BOOKS:

1. **Ralf Steinmetz & Klara Nahrstedt**, "Multimedia Computing, Communication & Applications", First Edition, 2008, Pearson Education.
2. **Ranjan Parekh**, "Principles of Multimedia", First Edition, 2008, Tata McGraw-Hill.
3. **Richard E.Mayer**, "Multimedia Learning", Second Edition, 2009, Cambridge University Press.
4. **Glencoe**, "Introduction to Multimedia", Student Edition, 2006, Tata McGraw-Hill.

E- REFERENCES:
1. www.tutorialfind.com/tutorials/multimedia
2. www.pdftutorials.com/multimedia/multimedia

III B.Sc. (CS)		Sub. Code
SEMESTER VI	DATA MINING	Hrs/Week - 5
PAPER XVI ELECTIVE III		Credits - 4

OBJECTIVE:

- To make students understand the concept of Data Mining.

UNIT – I   **15 Hrs**

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT – II   **15 Hrs**

Data Mining Techniques – a Statistical Perspective on data mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms.

UNIT – III   **15 Hrs**

Classification: Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques.

UNIT – IV   **15 Hrs**

Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms, Partitional Algorithms.

UNIT – V   **15 Hrs**

Association Rules: Introduction - Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – Measuring the Quality of Rules.

TEXT BOOK :

1. **Margaret H.Dunbam, "**Data Mining Introductory and Advanced Topics", 2003, Pearson Education.

REFERENCE BOOK :

1. **Jiawei Han & Micheline Kamber", "**Data Mining Concepts & Techniques", 2001 Academic Press.

E- REFERENCES:

1. http://books.google.co.in/books?id=O6F9iwsqZQwC&pg=PA13&source=gbs_selected_p
   ages&cad=3#v=onepage&q&f=false
2. http://web.engr.illinois.edu/~hanj/bk2/

III B.Sc. (CS)		Sub. Code
SEMESTER VI	WEB PROGRAMMING LAB	Hrs/Week - 5
PRACTICAL VII		Credits - 3

OBJECTIVE:

- To make students implement the concepts of HTML, JavaScript and ASP.Net.

EXERCISES:

HTML & JAVASCRIPT

1. Program to illustrate hyperlink using mouse move event.
2. Program to create a document which opens a new window without a toolbar, address bar or a status bar that unloads itself after one minute.
3. Program for HTML page to demonstrate the usage of Frames.
4. Program for HTML page to demonstrate the usage of table tags
5. Program using Mouse Event.
6. Program using CSS.
7. Program using arrays.
8. Program using Operators and expressions.
9. Program using Fucntions and dialog boxes.

ASP.NET

1. Create a Website that contains various standard controls
2. Create a Website that demonstrates use of validator controls
3. Create a Website that contains adrotator and calendar controls.
4. Create a web application using web services.
5. Create a web application for storing and accessing database.
6. Create a web application for maintaining user states(Cookies etc.)

III B.Sc. (CS)		Sub. Code
SEMESTER VI	PHP PROGRAMMING LAB	Hrs/Week - 5
PRACTICAL VII ELECTIVE III		Credits - 3

OBJECTIVE:

- To make students implement the basic concepts of PHP.

EXERCISES:

1. Write a PHP program using Indexed, Associative and Multidimensional arrays.
2. Write a server side PHP program that displays marks, total, grade of a student in tabular. format by accepting user inputs for name, number and marks from a HTML form[Do not use database].
3. Create a MySQL table and execute queries to read, add, remove and modify a record from that table.
4. Write a PHP program to access the employee data stored in a MySQL table. Use EmpNumber as input from a Form.
5. Write a PHP program using Classes with following data members : host, userid, passwd and Dbname.   Include three member functions ConnecttoDB(), ExecuteQuery() and CloseDatabase().
6. Write a PHP program to upload a file from client machine to the server machine.
7. Write a PHP program to create a directory, remove a directory and to read contents from the directory using choice menu.
8. Write a PHP program using two buttons to store Cookies and read Cookies' details.
9. Write a PHP program to demonstrate Session.

III B.Sc. (CS)		Sub. Code
SEMESTER VI	MULTIMEDIA LAB	Hrs/Week - 5
PRACTICAL VIII ELECTIVE III		Credits - 3

OBJECTIVE:

- To make students implement various Multimedia applications.

EXERCISES:

FLASH

1. To Move an object, to move an object in the path.
2. Text flips, Text color change.
3. Creating a link using texts and objects, Change the color of the object.
4. Shape Tweening and using shape hints, Motion Tweening, Hybrid Tweening.
5. Character animation, Object animation, Drawing Images.
6. An Application to show the Masking effect.
7. Slide show presentation.

PHOTOSHOP

1. To create a Greeting card, Create background picture.
2. Text effects, Photo effects.
3. Color, Buttons.
4. Editing Images.
5. Designing Webpage.

DREAMWEAVER

1. Text Management.
2. Tables- Layers.
3. Creating Menu bar.
4. Creating pages and Sites.
5. Animation in Images.

III B.Sc. (CS)		Sub. Code
SEMESTER VI		Hrs/Week - 5
PAPER VII	DATA MINING LAB	
ELECTIVE III		Credits - 3

OBJECTIVE:

- To make students implement various Data Mining applications.

EXERCISES:

1. Defining weather relation for different attributes
2. Defining employee relation for different attributes
3. Defining student relation for different attributes
4. Exploring weather relation using experimenter and obtaining results in various schemes
5. Exploring employee relation using experimenter
6. Exploring student relation using experimenter
7. Setting up a flow to load an arff file (batch mode) and perform a cross validation using J48
8. Design a knowledge flow layout, to load attribute selection normalize the attributes and to store the result in a csv saver.
9. Demonstration of classification rule process on dataset student.arff using j48 algorithm
10. Demonstration of classification rule process on dataset employee.arff using j48 algorithm
11. Demonstration of classification rule process on dataset employee.arff using id3 algorithm
12. Demonstration of classification rule process on dataset employee.arff using Naïve Bayes algorithm
13. Demonstration of clustering rule process on dataset student.arff using simple k-means
14. Develop an application to implement data generalization and summarization technique
15. Develop an application to extract association rule of data mining.
16. Develop an application for classification of data.
17. Develop an application for any one clustering technique.
18. Develop an application for decision tree.

DWARAKA DOSS GOVERDHAN DOSS VAISHNAV COLLEGE
(AUTONOMOUS)

College with Potential for Excellence, Linguistic Minority Institution
Affiliated to University of Madras
Arumbakkam,Chennai-600106

DEPARTMENT OF COMPUTER SCIENCE
(B.Sc. Computer Science)
Programme Code:15

SYLLABUS

(Choice Based Credit System)

FOR STUDENTS ADMITTED FROM 2018-2019 ONWARDS

Head
Department of Computer Science
Dwaraka Doss Goverdhan Doss
Vaishnav College (Shift II)
Arumbakkam, Chennai-600 106.

PRINCIPAL
Dwaraka Doss Goverdhan Doss
Vaishnav College
Arumbakkam, Chennai - 600106.

Dwaraka Doss Goverdhan Doss Vaishnav College (Autonomous)

B.Sc. DEGREE COURSE COMPUTER SCIENCE

Choice Based Credit System

REGULATIONS

(Effective from the academic year 2018-2019 onwards)

1. ELIGIBILITY FOR ADMISSION:

Candidates for admission to the first year of the Degree of Bachelor of Science courses shall be required to have passed the Higher Secondary Examinations (Academic or Vocational Stream) conducted by the Government of Tamil Nadu or an Examination accepted as equivalent thereof by the Syndicate of the University of Madras.

2. ELIGIBILITY FOR THE AWARD OF DEGREE:

A candidate shall be eligible for the award of the Degree only if he /she has undergone the prescribed course of study in a College affiliated to the University for a period of not less than three academic years, passed the examinations all the Six-Semesters prescribed earning 140 (120 are meant for Langauage-1, Language-2, Allied, Major, and 20 credits for other activities like Non-Major Elective, Soft Skills, Environmental Studies, Value Education, Extension activities etc.,)

3. DURATION:

a) Each academic year shall be divided into two semesters. The first academic year shall comprise the first and second semesters, the second academic year the third and fourth semesters and the third academic year the fifth and sixth semester respectively.

b) The odd semesters shall consist of the period from June to November of each year and the even semesters from December to April of each year. There shall be not less than 90 working days for each semester.

4. COURSE OF STUDY:

The main Subject of Study for Bachelor Degree Courses shall consist of the following:

PART – I   TAMIL / OTHER LANGUAGES

PART – II   ENGLISH

PART – III   CORE SUBJECTS
                   ALLIED SUBJECTS
                   PROJECT/ELECTIVES WITH THREE COURSES

PART – IV

1. NON- MAJOR ELECTIVE

a) Those who have studied Tamil up to XII Std. under Part-I shall take courses comprising of Information Technology and HTML or Advanced Tamil comprising of two courses.

b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).

2. SKILL BASED SUBJECTS - SOFT SKILLS

3. ENVIRONMENTAL STUDIES

4. VALUE EDUCATION

PART – V   EXTENSION ACTIVITIES

5. EXTENSION ACTIVITIES:

A candidate shall be awarded a maximum of 1 Credits for Compulsory Extension Service.

All the Students shall have to enroll for NSS /NCC/ NSO (Sports & Games) Rotract/Youth Red cross or any other service organizations in the college and shall have to put in Compulsory minimum attendance of 40 hours which shall be duly certified by the Principal of the college before 31st March in a year. If a student LACKS 40 HOURS ATTENDANCE in the First year, he/she shall have to compensate the same during the subsequent years.

Students those who complete minimum attendance of 40 hours in One year will get HALF A CREDIT and those who complete the attendance of 80 or more hours in Two Years will ONE CREDIT.

Literacy and population Education Field Work shall be compulsory components in the above extension service activities.

. SCHEME OF EXAMINATION:

Scheme of Examination shall be given in **APPENDIX – C**

Model Scheme

Course Component Name of the course	Inst. Hour	Credits	Exam Hours	Max. Marks		
				Ext. mark	Int. mark	Total
PART-I **Language**				60	40	100
PART-II **English**				60	40	100
PART-III **Core subject**				60	40	100
Core Subject : Practical				60	40	100
Allied Subject*				60	40	100
PART – IV **1. NON- MAJOR ELECTIVE** a) Those who have studied Tamil up to XII Std. under Part-I shall take courses comprising of Information Technology and HTML skills or Advanced Tamil comprising of two courses. b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).				60	40	100
2. **Skill based subjects** – Soft Skill**				60	40	100

* Syllabus framed and approved by Mathematics Department.
** Syllabus framed and approved by English Department

The following procedure is followed for awarding marks:

Theory Paper Internal Marks – 40 Marks

Criteria	Marks Awarded
Test (2 out of 3)	10
Attendance	10
Seminars	10
Assignments	10
Total Marks	40

Breakup of Attendance Marks

Range of Attendance	Marks Awarded
Below 60%	0
61% to 75%	06
76% to 90%	08
91% to 100%	10

Practical- Internal Marks

Criteria	Marks Awarded
Attendance	10
Practical Test (Best 2 out of 3)	20
Record	10
Total Marks	40

Split Up for Project

Criteria	Marks Awarded
Internal Mark(best 2 out of 3 presentations)	25
Viva-Voce	25
Project Report	50
Total Marks	100

7. **REQUIREMENTS FOR PROCEEDING TO SUBSEQUENT SEMESTER:**

    i. Candidates shall register their names for the First Semester Examination after the admission in UG Courses.

    ii. Candidates shall be permitted to proceed from the First Semester up to Final Semester irrespective of their failure in any of the Semester Examination subject to the condition that the candidates should register for all the arrear subject of earlier semesters along the current (subsequent) Semester Subjects.

    iii. Candidates shall be eligible to go to subsequent semester, only if they earn sufficient attendance as prescribed by the Academic council of the college from time to time. Provided in case of a candidate earning less than 50% of attendance in any one of the Semesters due to any extraordinary circumstances such as medical grounds, such candidates who shall produce Medical Certificate issued by the Authorized Medical Attendant (AMA), duly certified by the Principal of the college, shall be permitted to proceed to the next semester and to complete the Course of study. Such Candidates shall have to repeat the missed Semester by rejoining after completion of Final Semester of the course, after paying the fee for the break of study as prescribed by the University from time to time.

8. **PASSING MINIMUM:**

A candidate shall be declared PASS based on the following,

    a) There shall be no Passing Minimum for Internal.

    b) For External Examination, Passing Minimum shall be of 40% (Forty Percentage) of the maximum marks prescribed for the paper for each Paper/Practical/Project and Viva-voce.

    c) In the aggregate (External + Internal) the passing minimum shall be of 40%.

    d) She/ He shall be declared to have passed the whole examination, if she/he passes in all the papers and practical wherever prescribed/as per the scheme of examinations by earning 140 CREDITS in Parts-I, II, III, IV, V & VI. She/he shall also fulfill the extension activities prescribed earning a minimum of 1 Credit to qualify for the Degree.

9. CLASSIFICATION OF SUCCESSFUL CANDIDATES:

PART- I TAMIL / OTHER LANGUAGES (Sanskrit, Hindi and Telugu)

TAMIL/OTHER LANGUAGES: Successful candidates passing the Examinations for the Language and securing the marks (i) 60 percent and above and (ii) 50 percent and above but below 60 percent in the aggregate shall be declared to have passed the examination in the FIRST and SECOND class, respectively. All other successful candidates shall be declared to have passed the examination in the THIRD Class.

PART – II ENGLISH

ENGLISH: Successful candidates passing the examinations for English and securing the marks (i) 60 percent and above and (ii) 50 percent and above but below 60 percent in the aggregate shall be declared to have passed the examination in the FIRST and SECOND Class, respectively. All other successful candidates shall be declared to have passed the examination in the THIRD class.

PART – III Consisting of CORE SUBJECTS, ALLIED SUBJECTS, PROJECT/ ELECTIVE with three courses:

Successful candidates passing the examinations for Core Courses together and securing the marks (i) 60 percent and above (ii) 50 percent and above but below 60 percent in the aggregate of the marks prescribed for the Core courses together shall be declared to have passed the examination in the FIRST and SECOND Class respectively. All other successful candidates shall be declared to have passed the examinations in the Third Class.

PART – IV (consisting of sub items 1 (a), (b) & (c), 2, 3 and 4) as furnished in the Regulations 4 Part-IV supra.

PART – V EXTENTION ACTIVITIES**:**

Successful Candidate earning of 1 credit SHALL NOT BE taken into consideration for Classification/Ranking/ Distinction.

10. RANKING:

Candidates who pass all the examinations prescribed for the course in the FIRST APPEARANCE ITSELF ALONE are eligible for Ranking/ Distinction. Candidates who pass

all the examinations prescribed for the Course with a break in the First Appearance due to the reasons as furnished in the Regulations. 7 (iii) supra are only eligible for classification.

11. TRANSITORY PROVISION:

Candidates who have undergone the course of study prior to the academic year 2008–2009 will be permitted to appear for the examinations under those Regulations for a period of TWO years i.e. up to and inclusive of April/May 2012 Examinations. Thereafter, they will be permitted to appear for the examination only under the Regulations then in force.

QUESTION PAPER PATTERN FOR THEORY

Duration: 3 hours   **Max Marks: 100**

Part – A

FIVE out of SEVEN questions (5 x 5 = 25 Marks)

At least **ONE** question from each unit.

Part-B

THREE out of FIVE questions (5 x15 = 75 Marks)

ONE question from each unit.

QUESTION PAPER PATTERN FOR PRACTICALS

Duration: 3 hours   **Max Marks: 60**

The **External Examiner** will prepare a question paper on the spot with the help of the Question Bank supplied by the Controller's office.

B.Sc. DEGREE COURSE COMPUTER SCIENCE

FIRST SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART –I** Language Paper I	3	3	60	40	100	4
2.	**PART–II** English Paper I	3	3	60	40	100	4
3.	**PART-III** Paper I – Computer Fundamentals	3	3	60	40	100	4
4.	**PART –III** Paper II - Digital Electronics and Microprocessor	3	3	60	40	100	4
5.	**PART-III** Practical I - Digital Electronics and Microprocessor Lab	2	3	60	40	100	4
6.	**ALLIED PAPER – I** Mathematics – I*	5	3	60	40	100	6
7.	**PART-IV** **1. NON-MAJOR ELECTIVE** a) Those who have studied Tamil up to XII Std. shall take either Fundamentals of Information Technology or Advanced Tamil. b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).	2	3	60	40	100	2
8.	**2. SOFT SKILLS ****	3	3	60	40	100	2
	TOTAL	**24**					**30**

* Syllabus framed and approved by Mathematics Department
** Syllabus framed and approved by English Department

SECOND SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART –I** Language Paper II	3	3	60	40	100	4
2.	**PART–II** English Paper II	3	3	60	40	100	4
3.	**PART-III** Paper III – Object Oriented Programming Using C++	3	3	60	40	100	4
4.	**PART-III** Paper IV – Data Structures	3	3	60	40	100	4
5.	**PART-III** Practical II – OOPS and Data Structures Lab	2	3	60	40	100	4
6.	**Allied Paper – II** Mathematics - II*	5	3	60	40	100	6
7.	**PART-IV** **1. NON-MAJOR ELECTIVE** a) Those who have studied Tamil up to XII Std. shall take either HTML and Web Design or Advanced Tamil. b) Those who have not studied Tamil up to XII Std. and taken a Non-Tamil Language under Part-I shall take Tamil comprising of two course (level will be at 6th Standard).	2	3	60	40	100	2
8.	**2. Soft skills **	3	3	60	40	100	2
	TOTAL	24					30

* Syllabus framed and approved by Mathematics Department
** Syllabus framed and approved by English Department

THIRD SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART I** Language Paper III	3	3	60	40	100	6
2.	**PART–II** English Paper III	3	3	60	40	100	4
3.	**PART-III** Paper V – JAVA Programming	3	3	60	40	100	4
4.	**PART-III** Paper VI – Web Design	3	3	60	40	100	4
5.	**PART-III** Practical III - JAVA and Web Design lab	2	3	60	40	100	4
6.	**ALLIED PAPER III** Statistical Methods*	5	3	60	40	100	6
7.	**PART IV** Soft Skills **	3	3	60	40	100	2
	TOTAL	**22**					**30**

* Syllabus framed and approved by Mathematics Department
** Syllabus framed and approved by English Department

FOURTH SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART I** Language Paper IV	3	3	60	40	100	6
2.	**PART–II** English Paper IV	3	3	60	40	100	4
3.	**PART-III** Paper VII – Visual Programming	3	3	60	40	100	3
4.	**PART-III** Paper VIII - Elective I- Computer Networks / Client –Server Technology/ Artificial Intelligence and Expert Systems	3	3	60	40	100	4
5.	**PART-III** Practical IV – Visual Programming Lab	2	3	60	40	100	4
6.	**ALLIED PAPER – IV** Operation Research*	5	3	60	40	100	6
7.	**PART IV** Soft Skills**	3	3	60	40	100	2
8.	**PART IV** Environmental Studies	2	3	60	40	100	1
	TOTAL	**24**					**30**

 * Syllabus framed and approved by Mathematics Department
 ** Syllabus framed and approved by English Department

FIFTH SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART-III** PAPER IX - Operating Systems	4	3	60	40	100	5
2.	**PART-III** PAPER X - Database Management Systems	4	3	60	40	100	5
3.	**PART-III** PAPER XI - Computer Graphics	4	3	60	40	100	5
4.	**PART-III** PAPER XII - Elective II- ASP. Net Programming / Advanced Java Programming/ Multimedia	5	3	60	40	100	5
5.	**PART-III** Practical V - RDBMS Lab	3	3	60	40	100	5
6.	**PART-III** Practical VI - Lab Based on Elective II	3	3	60	40	100	5
7.	**PART-IV** Value Education	1	3	60	40	100	-
	TOTAL	**24**					**30**

SIXTH SEMESTER

S.NO	SUBJECTS	Credits	Exam Hrs	MAX. MARKS			Lecture Hours / Week
				External	Internal	Total	
1.	**PART-III** PAPER XIII – Programming in PHP	4	3	60	40	100	5
2.	**PART-III** PAPER XIV - Python Programming	4	3	60	40	100	5
3.	**PART-III** PAPER XV - Software Engineering	4	3	60	40	100	5
4.	**PART-III** PAPER XVI - Elective III - Data mining / Digital Image Processing/ Unified Modeling Language	5	3	60	40	100	5
5.	**PART-III** Practical VII – PHP and Python Programming Lab	3	3	60	40	100	5
6.	**PART-III** Practical VIII – Mini Project	5	3	60	40	100	5
7.	**PART IV** Extension Activities	1					
	TOTAL	**26**					**30**

I B.Sc. (CS)	COMPUTER FUNDAMENTALS	Sub. Code
SEMESTER I		Hrs/Week - 4
PAPER I		Credits - 3

OBJECTIVE:

- To impart knowledge about the fundamentals of computers.

UNIT – I   10 Hrs

Evolution of Computers - Generations, Types of computers, Computer system characteristics, Basic components of a Digital Computer - Control unit, ALU, Input/Output functions and memory, Memory addressing capability of a CPU, Word length of a computer, processing speed of a computer, Computer Classification.

UNIT – II   10 Hrs

Input/Output Units-: Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers & types - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers.

UNIT – III   15 Hrs

Memory - RAM, ROM, EPROM, PROM and other types of memory, Storage fundamentals - Primary Vs Secondary Data Storage, Various Storage Devices - Magnetic Tape, Magnetic Disks, Cartridge Tape, Hard Disk Drives, Floppy Disks (Winchester Disk), Optical Disks, CD, VCD, CD-R, CD-RW, Zip Drive, flash drives Video Disk , Blue Ray Disc, SD/MMC Memory cards, Physical structure of floppy & hard disk, drive naming conventions in PC. DVD, DVD-RW, USB Pen drive

UNIT – IV   15 Hrs

Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Algorithms , Flow Charts - Symbols, Rules for making Flow chart, Programming languages, Assemblers, Compilers and Interpreter, Computer Applications in Business.

UNIT – V   **10Hrs**

Introduction to Internet, Connecting to the Internet Hardware , Software & ISPs, Search Engines, Web Portals, Online Shopping, Email – Types of email, Compose and send a message. Reply to a message, Working with emails.

TEXT BOOK:

1. **B. Ram, "**Computer Fundamentals, Architecture and Organization" , New Age International Publishers

REFERENCE BOOK:

1. **S.K.Basandra**, "Computers Today ", Galgotia Publications.
2. **P.K. Sinha, "**Computer Fundamentals – P. K. Sinha – BPB Publication

E-REFERENCES:

1. https://books.google.co.in/books?id=ICjqr6V9S6UC&printsec=frontcover#v=onepage& q&f=false

I B.Sc. (CS)	DIGITAL ELECTRONICS AND MICROPROCESSOR	Sub. Code
SEMESTER I		Hrs/Week - 4
PAPER II		Credits - 3

OBJECTIVE:

- The main objective of digital logic design is to show how digital circuits are designed today and basic knowledge about 8085 Microprocessor.

UNIT – I   **10 Hrs**

Binary Systems & Code conversion, Boolean Algebra & Logic Gates – Truth Tables – Universal Gates – Simplification of Boolean functions: SOP, POS methods – K-map.

UNIT – II   **10 Hrs**

Combinational Logic: Adders & Subtractors – Multiplexer – Demultiplexer - Encoder – Decoder. Sequential Logic: RS, Clocked RS, D, JK, Master Slave JK, T Flip-Flops.

UNIT – III   **15 Hrs**

Shift Registers – Types of Shift Registers – Counters: Ripple Counter – Synchronous Counters – Up-Down Counter.

UNIT – IV   **10 Hrs**

Introduction to Microprocessors, Microcomputers, and Assembly Language – Microprocessor Architecture and Its Operations – 8085 MPU – Introduction to 8085 Instructions: Data Transfer Operations – Arithmetic, Logic and Branch Operations – Writing Assembly Language Programs- Addressing Modes.

UNIT – V   **15 Hrs**

Time Delay Programs: Time Delay Using One Register – Using a Register Pair – Using a Loop within Loop Technique - Stack and Subroutines - 8085 Interrupts: Vectored Interrupt – 8085 TRAP – DMA.

TEXT BOOKS:

1. **M.Moris Mano**, "Digital Logic and Computer Design", First Edition, 2004, Pearson.
2. **Ramesh S. Gaonkar**, 1999, Microprocessor Architecture, Programming and Applications with the 8085, Fifth Edition, 1999, Penram International Publishing (India) Pvt. Ltd.

REFERENCE BOOKS:

1. **D. P. Leach & A.P. Malvino**, "Digital Principles and Applications", Fifth Edition, 2002, TMH
2. **T. C.Bartee**, "Digital Computer Fundamentals", Sixth Edition, 1991, TMH.
3. **R.J.Tocci**, "Digital System Principles and Applications", Tenth Edition, 2012, Pearson Education.

E-REFERENCES:

1. http://nptel.iitm.ac.in/video.php?subjectId=117106086
2. http://nptel.iitm.ac.in/Onlinecourses/Srinivasan/

I B.Sc. (CS)	DIGITAL ELECTRONICS AND MICROPROCESSOR LAB	Sub. Code
SEMESTER I		Hrs/Week - 4
PRACTICAL I		Credits - 2

OBJECTIVE:

- The main objective is to understand and to solve the problems for any task.

DIGITAL ELECTRONICS:

1. Verification of Truth Table for AND, OR, NOT, NAND, NOR and EX-OR gates.
2. Realization of NOT, AND, OR, EX-OR gates with only NAND and only NOR gates.
3. Karnaugh Map Reduction and Logic Circuit Implementation.
4. Verification of Boolean Laws.
5. Implementation of Half-Adder and Half-Subtractor.
6. Implementation of Full-Adder and Full-Subtractor.
7. Four Bit Binary Adder.
8. Four Bit Binary Subtractor using 1's and 2's Complement.
9. Design of Shift Registers
10. Design of Binary Counters.

MICROPROCESSOR:

1. 8 Bit Addition and Subtraction.
2. 16 Bit Addition.
3. BCD Addition.
4. BCD Subtraction.
5. 8 Bit Multiplication.
6. BCD Multiplication.
7. 8 Bit Division.
8. Block Move
9. Reversing Array Elements.
10. Searching for an Element in an Array.
11. Finding Largest and Smallest Elements from an Array.
12. Sorting in Ascending and Descending Orders.

I B.Sc.(CS)		Sub. Code
SEMESTER I		**Hrs/Week - 2**
PART IV	**LOGICAL AND ANALYTICAL REASONING**	
PAPER I		**Credits - 2**

OBJECTIVE:

- To develop the skills relating to logical and analytical reasoning.

UNIT – I   **6 Hrs**

Questions relating to analogy test, classification, coding and de-coding, classification of ranks

UNIT – II   6 Hrs

Logic based Venn diagrams, Logical alphabet, number and time sequence test.

UNIT – III   6 Hrs

Logical arrangement of words, Blood relations, Letter series

UNIT – IV   6 Hrs

Questions relating to Completion of series, Counting of figures

UNIT – V   6 Hrs

Embedded figure, Anology, Classification of figures

TEXT BOOK:

1. **B.S.Sijwali, Indu Sijwali** – "A new approach to reasoning, verbal and non-verbal", Arihant Publications Pvt. Ltd.

E - REFERENCES:

1. indiabix.com
2. a2zinterviews.com
3. edugoog.com

I B.Sc. (CS)	OBJECT ORIENTED PROGRAMMING USING C++	Sub. Code
SEMESTER II		Hrs/Week - 4
PAPER III		Credits - 3

OBJECTIVE:

- To develop the programming skills with the basic concepts in C++.

UNIT – I   **10 Hrs**

Basic concepts of OOP- I/O statements - Data types – Operators - Control Structures: Decision making statements - Looping Statements.

UNIT – II   **10 Hrs**

Functions - Function declarations and definitions - Passing arguments - Inline functions – Function overloading- Arrays –one dimensional and two dimensional arrays - Passing arrays to functions.

UNIT – III   **15 Hrs**

Classes & Objects: Class - Defining member functions , Static Data Members - Passing objects to function - Returning objects - Friend function - Default Arguments. Constructor - Types of Constructors - Destructors.

UNIT – IV   **15 Hrs**

Operator Overloading - Rules for overloading operators - Overloading of unary and binary operators. Inheritance - Types of inheritance - Virtual base classes.

UNIT – V   **10 Hrs**

Pointers- this pointer – Pointer to an Object - Virtual functions. Working with files - Classes for file stream operations - Opening and closing a file - Detecting EOF - File modes for opening.

TEXT BOOKS:

1. **E.Balaguruswamy**, "Object Oriented Programming in C++", Sixth Edition, 2012, TMH.

REFERENCE BOOKS:

1. **H. Schildt**, "The Complete Reference C++", Fourth Edition, 2002, TMH
2. **Kanetkar Y**,"Let us C++", Third Edition, 1999, BPB Publishers.
3. **John R Hubbard,** "Programming with C++", Third Edition, 2009, TMH.

E-REFERENCES:

1. http://en.highscore.de/cpp/boost/
2. http://bookboon.com/en/structural-programming-with-c-plus-plus-ebook

I B.Sc. (CS)	DATA STRUCTURES	Sub. Code
SEMESTER II		Hrs/Week – 4
PAPER IV		Credits – 3

OBJECTIVE:

- To understand the concept of data structures and its applications

UNIT – I   **10 Hrs**

Data Structures – Definition and Classification - Arrays – Array Operations – Representation of Arrays – Applications of Arrays. Searching Techniques – Linear Search – Binary Search. Sorting techniques – Bubble Sort, Selection Sort, and Insertion Sort

UNIT – II   10 Hrs

Stack – Operations on Stacks -Stack applications – Infix to Postfix notation and Evaluation of Postfix notation. Queues - Operations on the Queues - Circular queue – Dequeue.

UNIT – III   10 Hrs

Introduction to the Linked List - Basic operations on linked list – Singly Linked Lists – Doubly Linked Lists – Circularly Linked Lists –Addition of Polynomials.

UNIT – IV   15 Hrs

Trees - Basic Terminology - Binary Trees - Representation of Trees and Binary trees - Binary Tree Traversals – Binary Search Trees - Threaded Binary Trees.

UNIT – V   15 Hrs

Graphs – Basic Terminology – Representation of Graphs - Graph Traversals – Minimum Cost Spanning tree - Dijkstra's Shortest Path.

TEXT BOOKS:

1. **S. Sahni & E. Horowitz**, "Fundamentals of Data Structure", Second Edition, 1999, Galgotia Publications.

2. **Alfred V.Aho, John E.Hopcraft, Jeffrey D.Ullman**, "Data Structures and Algorithms", 2009, Addison-Wesley.

REFERENCE BOOKS:

1. **G.A. Vijayalakshmi Pai**, "Data structures and Algorithms- Concepts, Techniques and Applications", First Edition, 2011, Tata McGraw-Hill.
2. **Dr. A. Chitra**, "Data Structures", 2009, Vijay Nicole Imprints Private Limited.
3. **Richard F Gilberg Behrouz A. Forouzan, Thomson**, "Data Structure – A Pseudocode Approach with C", First Edition, 2005, University of California.
4. **Seymour Lipschutz**, "Schaum's Outline of Theory and Problems of Data structure", Second Edition, Tata McGraw-Hill.

E- REFERENCES:

1. http://nptel.iitm.ac.in/courses/Webcourse-contents/IIT-%20Guwahati/data_str_algo/frameset.htm
2. http://www.personal.kent.edu/~rmuhamma/Algorithms/algorithm.html
3. en.wikibooks.org/wiki/Data_structures

B.Sc. (CS)	CONTEMPORARY MANAGEMENT SKILLS	Sub. Code
SEMESTER II		Hrs/Week - 2
PART IV PAPER II		Credits – 2

OBJECTIVE:

- The main objective is to develop the personality and behavioral skills of students.

UNIT – I   **6 Hrs**

Understanding the Self -Personality - Meaning, Types. Theories- Trait Factor Theory, Psychoanalytic Theory, Socio-Psychological Theory, Self Theory, Personality Factors, Process of Personality Development, Vision and Goal in Life. Introduction to Briggs - Myers personality types.

UNIT – II   6 Hrs

Developing the Self Positive Psychology - optimism - Dimensions of Optimizing - Emotional Management: Emotions of Intelligence Roles -Emotional Intelligence in workplace - Self Efficacy - Process, & Impact of Implications - Self assertiveness.

UNIT – III   6 Hrs

Behavioral Development Behavioral Performance management – Behaviouristic Theory/ Longnitive/ Social Learning and Social Longnitive Theories - Laws of Behavior -Positive and Negative Reinforcement - Role of Financial / Non- Financial rewards - Behavioral Performance Management or OB Modification - Application Exercises.

UNIT – IV   6 Hrs

Personal and Managerial Effectiveness Time Management, Organizing Life, Burn Out and Stress Management, Career Identification and Career Development. Steps to Effectiveness: Proactive, put first things first, Think win-win, Understand than being to be understood, Synergy, Sharpen the saw.

UNIT – V   6 Hrs

Developing Soft Skills - Developing Leadership Potentials - Effective Communication skills, Development of positive thinking, Interpersonal relationships, Consensus building, Business and Social Etiquette.

TEXT BOOKS:

1. **Hurlock.B,Elizabeth,** "Personality Development", 2001, First Edition, TMH.

REFERENCE BOOKS:

1. **Shiv Khera,**"You can Win", 2002, Macmillan India Ltd.,
2. **Steven.R Covey,** "Seven Habits of Highly effective people". 2001, Franklin Convey.
3. **Fred Luthans,** "Organizational Behavior", Tenth edition, 2005, TMH.

E-REFERENCE:

1. http://www.nptel.iitm.ac.in/courses/110105029/pdf%20sahany/Module.6-23.pdf

I B.Sc. (CS)	OOPS AND DATA STRUCTURES LAB	Sub. Code
SEMESTER II		Hrs/Week – 4
PRACTICAL II		Credits – 2

OBJECTIVE:

- The develop the programming skills in C++ and 8085 assembly language.

EXERCISES:

C++

1. Program using classes and objects.
2. Program using Inline function.
3. Program using Static Members.
4. Program using constructor and destructor.
5. Program for various types of inheritance.
6. Program for Function Overloading.
7. Program using operator overloading.
8. Program using virtual functions.
9. Program using files.

DATA STRUCTURES

1. Program using arrays.
2. Program for searching techniques.
3. Program for sorting techniques.
4. Program using Stack.
5. Program using Queue.
6. Program using Linked List.
7. Program for tree traversals.
8. Program for graph traversals

II B.Sc. (CS)		Sub. Code
SEMESTER III	JAVA PROGRAMMING	Hrs/Week - 4
PAPER V		Credits - 3

OBJECTIVE:

• To understand the concepts and features of Java.

UNIT – I   **10 Hrs**
Introduction to Java - Features of Java – Java Tokens - Data Types - Variables - Arrays - Operators - Control Statements.

UNIT – II   **15 Hrs**
Classes - Objects - Constructors - Overloading method - Static and Final members - String Objects - String Class -String Buffer - Inheritance - Overriding methods - Using super - Abstract class.

UNIT – III   **10 Hrs**
Packages - Interfaces - Exception Handling – User-Defined Exception – Multithreading - Thread - Runnable Interface.

UNIT – IV   **10 Hrs**
I/O Streams: Stream classes – Byte stream classes - Character stream classes - File Streams – Using File class – File exceptions – Creation of file – Reading or writing characters/bytes – Random access files.

UNIT – V   **15 Hrs**
Applets – Preparing to write applets – Building Applet code – Applet life cycle – Applet tag – Passing parameters to Applets - AWT Controls - Layout Managers.

TEXT BOOKS:
1. **E.Balagurusamy**, "Programming with Java", Fourth Edition, 2010, Tata McGraw- Hill.
2. **P Radha Krishna**, "Object Oriented Programming through Java", Second Edition, 2007, Universities Press.

REFERENCE BOOKS:

1. **K. Arnold and J. Gosling**, "The Java Programming Language", Second Edition, 1996, Addison Wesley.
2. **P. Naughton and H. Schildt**, "Java2 (The Complete Reference)", Eight Edition, 2005, Tata McGraw-Hill.
3. **Kathy Sierra and Bert Bates**, "Head First Java", Second Edition, 2003, Oreilly.

E- REFERENCES:

1. www.tutorialspoint.com/java/java-quick-guide.htm
2. www.ntu.edu.sg/home/ehchua/programming/java/J3a_OOPBasics.html
3. www.tutorialspoint.com/java/java_overview.htm

II B.Sc. (CS)	WEB DESIGN	Sub. Code
SEMESTER III		Hrs/Week – 4
PAPER VI		Credits – 3

OBJECTIVE:

- To impart knowledge about the technologies for designing web design.

UNIT – I   **10 Hrs**

Internet: Basic Concepts – Communicating on Internet – Internet Domains – Internet Server Identities – Establishing Connectivity on the Internet.

UNIT – II   **10 Hrs**

Introduction to HTML - Anchor Tag – Hyperlink - Head and Body Section – Heading - Horizontal Ruler – Paragraphs – Tags - Images and Picture – Lists – Tables – Frames - Forms and forms elements.

UNIT – III   **15 Hrs**

DHTML and Style sheets - Defining styles - Elements of style - Linking a style sheet to a html documents - Inline style - External style sheets - Multiple styles - Web page designing.

UNIT – IV   **15 Hrs**

Introduction to Java script - Advantage of JavaScript - Data type - Variable – Array -Operator and Expression - Control and looping Constructs - Functions - Dialog Boxes.

UNIT – V   **10 Hrs**

JavaScript Document Object Model - Event Handling - Form Object - Built in Object - User Defined Object- Cookies.

TEXT BOOKS:

   1. **Ivan Bayross**, "Web Enabled Commercial Application Development using HTML, JavaScript, DHTML and PHP", Fourth Edition, 2010, BPB Publications.

REFERENCE BOOKS:

   1. **Harvey M. Deitel, Paul J. Deitel, Tem R. Nieto**, "Internet & World Wide Web – How to program", Third Edition, 2002, Prentice Hall

E-REFERENCE:

   1. http://books.google.co.in/books?id=BrASwbtAGGUC&pg=PA69&source=gbs_selected_pages&cad=2#v=onepage&q&f=false

II B.Sc. (CS)		Sub. Code
SEMESTER III	JAVA AND WEB DESIGN LAB	Hrs/Week - 4
PRACTICAL III		Credits - 2

OBJECTIVE:

• To apply the Java concepts through various applications and to develop a web page.

EXERCISES:

JAVA & APPLETS

1. Program using String Class.

2. Program using String Buffer.

3. Programming using Inheritance.

4. Program using interface.

5. Program using Exception Handling.

6. Program using packages.0

7. Program using Files.

8. Implementing Thread based applications

9. Working with Colors, Fonts and Shapes.

10. Usage of AWT components in suitable applications.

WEB DESIGN

1. Program for HTML page to demonstrate the usage of List Tags.

2. Program for HTML page to demonstrate the usage of Table Tags.

3. Program for HTML page to demonstrate the usage of Frames.

4. Program to illustrate hyperlink using MouseOver event.

5. Program to create a document which opens a new window without a toolbar, address bar
   or a status bar that unloads itself after one minute.

6. Program using CSS.

7. Program using arrays.

8. Program using Operators and expressions.

9. Program using Functions and dialog boxes.

II B.Sc. (CS)		Sub. Code
SEMESTER IV		Hrs/Week - 3
PAPER VII	**VISUAL PROGRAMMING**	Credits - 3

OBJECTIVE:

- To understand the concepts of Visual Basic.

UNIT – I   **15 Hrs**

Introduction to Visual Basic-introduction Graphical User Interface (GUI), Programming Language (Procedural, Object Oriented, Event Driven), The Visual Basic Environment- VB Controls Textboxes, Frames, Check Boxes , Option Buttons, List Boxes & Combo Boxes, Images, Setting a Border & Styles, The Shape Control, The line Control, Working with multiple controls and their properties, Coding for controls.

UNIT – II   15 Hrs

Variables, Constants, and Calculations-Variables, Variables Public, Private, Static, Constants, Data Types, Naming -rules/conventions, Constants, Named & intrinsic, Declaring variables, Scope of variables, Val Function, Arithmetic Operations, Formatting Data-handling Strings - Decision & Conditions- If Statement, If then-else Statement, Nested If Statements, Do/Loops, For/Next Loops, Case Structure , Displaying Message in Message Box- Using Call Statement to call a procedure.

UNIT – III   15 Hrs

Menus, Sub-Procedures and functions , Using common dialog box, Creating a new sub-procedure, Passing Variables to Procedures, Passing Argument ByVal or ByRef, Writing a Function Procedure, Multiple Forms -Creating , adding, removing Forms in project - Arrays Single-Dimension Arrays, Initializing an Array using for Each, Two dimensional arrays.

UNIT – IV   15 Hrs

Creating the database files for use by Visual Basic (Using MS-Access), Using the ActiveX Data Control (ADO), navigating the database in code using recordset object, using list boxes & combo boxes as data bound controls, updating a database file (adding, deleting records) - Displaying data in grids (grid control, properties of grid) , searching for a specific record (findfirst, findnext, findlast, findprevious), seek method, working with database fields

UNIT – V   15 Hrs

Trapping Program Errors, The Err Object, Dialog Boxes- COM/OLE - automation - DLL Servers - OLE Drag and Drop.

TEXT BOOKS:

1. **Gary Cornell**, "Visual Basic 6 from the Ground up", First Edition, 1999, Tata McGraw-Hill.
2. **Steven Holzner**, "Visual Basic 6 Black Book", Second Edition, 1999, Oreilly.

REFERENCE BOOKS:

1. **Noel Jerke**, "Visual Basic 6 (The Complete Reference)", Second Edition, 1999, Tata McGraw-Hill.
2. **Overland Brian**, "Visual Basic 6 in Plain English", Third Edition, 1999, John Wiley.

E-REFERENCES:

1. www.tutorialspoint.com/listtutorials/visual-basic/

II B.Sc. (CS)		Sub. Code
SEMESTER IV	COMPUTER NETWORKS	Hrs/Week - 4
PAPER VIII		Credits - 3
ELECTIVE I		

OBJECTIVE:

- To understand the concept of networks.

UNIT – I   **10 Hrs**

Introduction – Uses of Computer Networks – Network Hardware- Network Software- OSI Reference Model – TCP/IP Reference Model.

UNIT – II   **10 Hrs**

Physical Layer – Guided Transmission media – Wireless Transmission – Public switched Telephone Network – Local Loop – Trunks – Multiplexing- Switching.

UNIT – III   **15 Hrs**

Data Link Layer – Design Issues- Error Detection and Correction- Simplex Stop and Wait Protocol- Sliding Window Protocol.

UNIT – IV   **15 Hrs**

Network Layer – Design Issues – Routing Algorithm- IP Protocol – IP Addresses- Internet Control Protocols.

UNIT – V   **15 Hrs**

Transport Layer: Addressing-Connection Establishment-Connection Release. Internet Transport Protocol: UDP-TCP. Application Layer: DNS- Electronic Mail- World Wide Web.

TEXT BOOK:

1. **Andrew S. Tanenbaum,** "Computer Networks", Fourth Edition, 2008, PHI.

REFERENCE BOOKS:

1. **Behrouz and Forouzan**, "Data Communication and Networking", Third Edition, 2006, TMH.

E-REFERENCE:

1. http://117.55.241.6/library/E-books/Data%20communication%20&%20Networking%20by %20Forouzon.pdf

II B.Sc.(CS)		Sub. Code
SEMESTER IV	**CLIENT/ SERVER TECHNOLOGY**	Hrs/Week - 4
PAPER-VIII ELECTIVE I		Credits - 3

OBJECTIVE:

- To understand the concepts of server computing and its technology**.**

UNIT – I 10 Hrs

Client/Server Computing – Advantages of Client/Server Computing – Technology - Revolution - Connectivity – Ways to improve Performance – How to reduce network Traffic

UNIT – II 10 Hrs

Components of Client/Server Applications – The Client: Role of a Client – Client Services – Request for Service. Components of Client/Server Applications – The Server: The Role of a Server – Server Functionality in Detail – The Network Operating System – What are the Available Platforms – The Server Operating system.

UNIT – III 15 Hrs

Components of Client/Server Applications – Connectivity: Open System Interconnect – Communications Interface Technology – Interprocess communication – WAN Technologies.

UNIT – IV 15 Hrs

Components of Client/Server Applications–Software: Factors Driving demand for application software development – Rising Technology Staff costs – Need to improve Technology – Need for Common Interface across Platforms – Client/Server System Development Methodology. Components of Client/Server Applications – Hardware:Hadware/Network Acquisition – PC-Level Processing Units – Machintosh, notebooks, Pen – UNIX Workstation – x-terminals – Disk, Tape, Optical Disks, NIC and UPS.

UNIT – V 10hrs

Components of Client/Server applications–Service and Support: System Administration. The Future of Client/Server Computing: Enabling Technologies – Transformational Systems.

TEXT BOOK:

1. **Patric Smith, Steve Guenferich**, "CLIENT/SERVER COMPUTING**",** Second Edition, Prentice Hall of India Private Limited, New Delhi (Chapters 1-8 & 10)

E- REFERENCES:

1. http://arts.nprcolleges.org/e%20content/commerce/Inroduction%20to%20Client%20Server%20computer-%20TCA8C23.pdf

II B.Sc.,(CS)	ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS	Sub. Code
SEMESTER IV		Hrs/Week - 4
PAPER VIII ELECTIVE I		Credits - 3

OBJECTIVE:

- To understand the general concepts of AI programming languages.

UNIT – I   **10 Hrs**

Introduction of Artificial Intelligence: Overview of Artificial Intelligence – Knowledge: General Concepts – Lisp and other AI Programming Languages.

UNIT – II   **10 Hrs**

Knowledge Representation – Formalized Symbolic logics – Dealing with Inconsistencies and Uncertainties – Probabilistic Reasoning - Structured Knowledge : Graphs, Frames and Related Structures – Object – Oriented Representations.

UNIT – III   **15 Hrs**

Knowledge Organization and Manipulation: Search and Control Strategies – Matching Techniques – Knowledge Organization and Management

UNIT – IV   **15 Hrs**

Perception and Communication: Natural Language Processing – Pattern Recognition – Visual Image Understanding.

UNIT – V   **10 Hrs**

Expert System Architectures: Rule-Based System Architectures – Nonproduction System Architectures – Dealing with Uncertainty – Knowledge Acquisition and Validation – Knowledge system Building Tools.

TEXT BOOK:

1. **Dan W. Patterson**," Introduction to Artificial Intelligence and Expert System", 2005, PHI Learning.

E- REFERENCES:

1. http://www.ddegjust.ac.in/studymaterial/mca-5/mca-402.pdf

II B.Sc. (CS)		Sub. Code
SEMESTER IV	VISUAL PROGRAMMING LAB	Hrs/Week - 4
PRACTICAL IV		Credits - 2

OBJECTIVE:

- To improve the programming skills of the students with respect to advance concepts of Visual Basic.

EXERCISES:

1. Building simple applications with VB (Calculator and String Functions)
2. Working with intrinsic controls (Radio buttons, Check boxes , Picture boxes, Timer and Shape control)
3. Application using MDI form
4. Application using menus
5. Application using Dialog Boxes
6. Application using Functions(pass by value and Reference) and Procedures
7. Create database and performing the operations given below using a Menu
8. Driven program: (i) Insertion (ii) Deletion (iii) Modification (iv) Generating reports (Simple) for the following Systems using any RDBMS package:
   a) Payroll Processing
   b) Mark sheet Processing
   c) Library information system
   d) Income tax processing system
   e) Electricity bill preparation system
   f) Telephone directory maintenance.

III B.Sc. (CS)		Sub. Code
SEMESTER V	**OPERATING SYSTEMS**	**Hrs/Week - 5**
PAPER IX		**Credits - 4**

OBJECTIVE:

- This paper is intended to make the student aware of all concepts related to operating system.

UNIT – I   **15 Hrs**

Introduction- views and goals **-** Operating-System Services - User and Operating-System interface - System Call- Types of System Calls – Operating System Design and Implementation - Operating-System Structure. Process Management: Process concept- Process Scheduling - Operations on Processes- Interprocess Communication .Threads: Types of threads

UNIT – II   15 Hrs

Process Scheduling: Basic Concepts- Scheduling Criteria - Scheduling Algorithms Multiple-Processor Scheduling –CPU Scheduling .Synchronization: The Critical-Section Problem Synchronization Hardware –Semaphores- Classic Problem of Synchronization.

UNIT –III   15 Hrs

Deadlocks: Deadlock Characterization - Methods for Handling Deadlocks- Deadlock Prevention- Deadlock Avoidance - Deadlock Detection - Recovery from Deadlock.

UNIT –IV   15Hrs

Memory-Management Strategies: Swapping - Contiguous Memory Allocation –Segmentation- Paging - Structure of the Page Table . Virtual-Memory Management: Demand Paging - Page Replacement - Allocation of Frames -Thrashing .

UNIT –V   15 Hrs

Storage Management: File System- File Concept - Access Methods- Directory and Disk Structure -File Sharing - Protection .Allocation Methods - Free-Space Management - Efficiency and Performance – Recovery.

<u>**TEXT BOOKS:**</u>

   1. **A. Silberschatz P.B.Galvin, Gange**. "Operating System Concepts", Ninth Edition, 2013, Addison Wesley Publishing Co.

<u>**REFERENCE BOOKS:**</u>

   1. **H.M. Deitel**, "An Introduction to Operating System", Second Edition, Addison Wesley

.

E-REFERENCES:

1. http://www.cs.kent.edu/~farrell/osf03/oldnotes/
2. https://it325blog.files.wordpress.com/2012/09/operating-system-concepts-7-th-edition.pdf

III B.Sc. (CS)		Sub. Code
SEMESTER V	DATABASE MANAGEMENT SYSTEMS	Hrs/Week - 5
PAPER X		Credits - 4

OBJECTIVE:

- To understand the concepts related to Database Management System, SQL and PL/SQL.

UNIT – I   **15 Hrs**

Introduction - Database System - Characteristics of Database Management Systems - Architecture of Database Management Systems - Database Models - System Development Life Cycle - Entity Relationship Model

UNIT – II   15 Hrs

Introduction to Relational Database Model - Structure of Relational Model – Keys - Relational Algebra - Normalization: Functional Dependency - First Normal form - Second Normal Form- Third Normal form - Boyce-Codd Normal Form - Fourth Normal Form.

UNIT – III   15 Hrs

SQL: Introduction-Data Retrieval - Single row function - Group function - Set Function - Sub query - Joins. Data Manipulation Language: Insert, Update and Delete Statements - Transaction Control Language – View – Sequence – Synonym – Index - Defining Constraints.

UNIT – IV   15 Hrs

PL/SQL: Introduction-PL/SQL Basic-Character Set- PL/SQL Structure-SQL
            Cursor- Subprograms-Functions-Procedures.

UNIT –V   15 Hrs

Exception Handler Introduction - Predefined Exception - User Defined Exception – Triggers - Implicit and Explicit Cursors - Loops in Explicit Cursor.

TEXT BOOK:

1. **Pranab Kumar Das Gupta and P. Radha Krishnan,** "Database Management System
   Oracle SQL and PL/SQL", Second Edition, 2013, PHI Learning Private Limited.

REFERENCE BOOKS:

1. **Ramez Elmasri and Shamkant B. Navathe**, "Fundamentals of Database Systems", Fifth Edition, 2007, Pearson Publications.

2. **Abraham Silberschatz, Henry Korth, S. Sudarshan**, "Database System Concepts", Sixth Edition, 2010, Mc-Graw Hill Education.

E-REFERENCE:

1. http://www.amazon.in/DATABASE-MANAGEMENT-SYSTEM-ORACLE-SQL-ebook/dp/B00LPGBWZ0#reader_B00LPGBWZ0

III B.Sc. (CS)		Sub. Code
SEMESTER V	**COMPUTER GRAPHICS**	Hrs/Week - 5
PAPER XI		Credits - 4

OBJECTIVE:

- To enable the students to learn about the working of input output devices.
- To learn the concepts of 2D and 3D transformation models and generation algorithms.

UNIT – I   **15 Hrs**

Introduction - Overview of graphics systems : Video display devices, Refresh Cathod Ray Tube - Raster scan display - Random scan display - Interactive input devices - Output primitives: points and lines, line drawing algorithms - (DDA) - Bresenham's Line Drawing. Filled Area Primitives: Scan Line Polygon Fill – Boundary fill – Flood Fill.

UNIT – II   15 Hrs

Two dimensional Geometric Transformations: Basic Transformation - Matrix representations and homogeneous coordinates, composite transformations. Two dimensional viewing: Window-to-viewport coordinate transformation.

UNIT – III   15 Hrs

2D Clipping: Point , Line, Cohen Sutherland Line Clipping – Polygon Clipping – Sutherland-Hodgeman polygon Clipping – Text Clipping. Graphical User Interfaces and interactive input methods: Input of Graphical data, Input functions.

UNIT – IV   15 Hrs

Three dimensional geometric and modeling transformations: Translation, Rotation, Scaling and Composite transformations. Three dimensional viewing: Viewing pipeline- Viewing coordinates- Projections.

UNIT – V   15 Hrs

Intuitive color concepts - RGB color model - YIQ color model - CMY color model -HSV color model - HLS color model- Color selection.

TEXT BOOK:

1. **Donald Hearn & M. Paulin Baker**, "Computer Graphics", Second Edition, 2003, Pearson Education.

REFERENCE BOOKS:

1. **W.M. Newman and R.F.Sproull**, "Principles of Interactive Computer Graphics", Tata McGraw Hill International Edition.
2. **James D. Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes**, "Computer Graphics-Principles and Practice", Second Edition, 2007, Pearson Education.

E-REFERENCES:

1. http://www.uptu.ac.in/pdf/sub_ecs_504_30sep14.pdf

B.Sc. (CS)		Sub. Code
SEMESTER V		Hrs/Week - 5
PAPER XII ELECTIVE II	ASP.NET PROGRAMMING	Credits – 5

OBJECTIVE:

- To make students aware of the concepts in ASP.NET.

UNIT – I   **10 Hrs**

Overview of ASP.Net Framework - Page Structure - Compiler Directives –Namespace.

UNIT – II   **10 Hrs**

Understanding ASP.Net Control: Standard Controls: Displaying information - Accepting user input - Submitting form data - Displaying images - HyperLink control

UNIT – III   **15 Hrs**

Overview of Validation Control- RequiredFieldValidator Control-RangeValidator Control-CompareValidator Control-CustomValidator Control- ValidationSummary Control - Rich Controls: AdRotator, Calender control.

UNIT – IV   **15 Hrs**

Overview of Data Access:Data Bound Control - Data Source Control - Data Binding - SqlDataSource control -OleDb Connection - OleDb Command - OleDb Transaction - Data Adapter - Data Reader -DataSet.

UNIT – V   **10 Hrs**

List Control: DropDownList – RadioButtonList – ListBoxCheckBoxList – BulletedList - GridView Control – Repeater - DataList Control - Building Data Access Component with ADO.NET - Maintaining Application State: Browser Cookies - Session State, Web Services.

TEXT BOOK:

1. Stephen Walther, Kevin Hoffman and Nate Dudek, "ASP.Net 4 Unleashed", 2011, Pearson Education.

REFERENCE BOOKS:

1. **Harvey M. Deitel, Paul J. Deitel, Tem R. Nieto**, "Internet & World Wide Web – How to program", Third Edition, 2002, Prentice Hall.
2. **Greg Buczek**,"ASP.NET Developer's guide" , 2002, Tata McGraw-Hill.

E-REFERENCE:

1. http://books.google.co.in/books?id=BrASwbtAGGUC&pg=PA69&source=gbs_selected_ pages&cad=2#v=onepage&q&f=false

B.Sc. (CS)		Sub. Code
SEMESTER V		Hrs/Week - 5
PAPER XII	ADVANCED JAVA PROGRAMMING	
ELECTIVE II		Credits – 5

OBJECTIVE:

- This provide an in-depth knowledge of Advanced Java language and programming.
- Implementing Java components and practicing RMI,BEAN and JDBC.

UNIT – I   **15 Hrs**

Servlet Overview: server side includes-Creating an HTML login screen-Using the Servlet Context -performing URL Redirection: Using Request Dispatcher -Using sendRedirect -Session tracking with servlets –Cookies-URL rewriting -Hidden fields -session-tracking API with HttpSession object –Listener-Filters-Deploying servlets -Servlet listener elements -Servlet filter elements -Applet-servlet communication- JDBC connectivity

UNIT – II   **15 Hrs**

JSP –Introduction JSP-Examining MVC and JSP -JSP scripting elements & directives-Working with variables scopes-Error Pages - using Java Beans in JSP Working with Java Mail-Understanding Protocols in Java mail-Components-Java mail API-Integrating into J2EE-Understanding Java Messaging Services-Transactions.

UNIT – III   **15 Hrs**

RMI – Overview – Developing applications with RMI:Declaring & Implementing remote interfaces-stubs & skeletons, Registering remote objects, writing RMI clients –Pushing data from RMI Servlet – RMI over Inter-ORB Protocol

UNIT – IV   **15 Hrs**

Java Beans: Advantages – BDK - Developing Beans – Notable beans –Application Builder tool- JAR files-Introspection-Bound Properties-Persistence-customizers - Java Beans API.

UNIT – V   **15 Hrs**

EJB: EJB Component Model -Reviewing Roles, Relationships, and Responsibilities: The deployment descriptor -The bean provider -The server/container provider -The application assembler -The EJB deployer-The system administrator -Entity beans -Session beans.

TEXT BOOK:

1. **McGovern,R. Adatia,Y. Fain**, " J2EE 1.4 Bible" 2003, Wiley-dreamtech India Pvt. Ltd, New Delhi.
2. **Schildt**, "Java 2 Complete Reference", Fifth Edition, 2002, Tata McGraw-Hill, New Delhi.

REFERENCE BOOKS:

1. **K. Moss**, "Java Servlets", Second edition, 1999, Tata McGraw Hill, New Delhi.
2. **D. R.Callaway**, "Inside Servlets", 1999, Addison Wesley, Boston
3. **Joseph O'Neil**, "Java Beans from the Ground Up" 1998, Tata McGraw Hill, New Delhi.
4. **TomValesky,** Enterprise JavaBeans, Addison Wesley.

E-REFERENCES:

1. http://www.tutorialspoint.com/servlets/
2. http://www.javatpoint.com/jsp-tutorial
3. http://www.javatpoint.com/RMI
4. www.cis.upenn.edu/~bcpierce/courses/629/papers/Java-tutorial/beans/
5. www.tutorialspoint.com/ejb

III B.Sc. (CS)		Sub. Code
SEMESTER V	**MULTIMEDIA**	Hrs/Week - 5
PAPER XII ELECTIVE II		Credits – 5

OBJECTIVE:

• To make students understand the concept of Multimedia Systems.

UNIT – I   **15 Hrs**

Multimedia Definition – Use of Multimedia – Delivering Multimedia – Text: About Fonts and Faces – Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext.

UNIT – II   **15 Hrs**

Images: Plan Approach – Organize Tools – Configure Computer Workspace – Making Still Images – Color – Image File Formats. Sound: The Power of Sound – Digital Audio – MIDI Audio – MIDI vs. Digital Audio – Multimedia System Sounds – Audio File Formats.

UNIT – III   **15 Hrs**

Animation: The Power of Motion – Principles of Animation – Animation by Computer – Making Animations that Work. Video: Using Video – Working with Video and Displays – Digital Video Containers – Obtaining Video Clips – Shooting and Editing Video.

UNIT – IV   **15 Hrs**

Making Multimedia: The Stage of Multimedia Project – The Intangible Needs – The Hardware Needs: Memory and Storage Devices – I/O Devices. The Software Needs: Basic Tools. An Authoring Systems Needs: Types - Time Based – Icon Based. Multimedia Production Team.

UNIT – V   **15 Hrs**

Planning and Costing: The Process of Making Multimedia – Scheduling – Estimating – RFPs and Bid Proposals. Designing and Producing – Content and Talent: Acquiring Content – Acquiring Talent.

TEXT BOOKS:

1. **Tay Vaughan**, "Multimedia: Making It Work", Eighth Edition, 2011, Tata McGraw-Hill.
2. **S.Gokul**, "Multimedia Magic", Revised and updated Second Edition, 2008, BPB.

REFERENCE BOOKS:

1. **Ralf Steinmetz & Klara Nahrstedt**, "Multimedia Computing, Communication & Applications", First Edition, 2008, Pearson Education.
2. **Ranjan Parekh**, "Principles of Multimedia", First Edition, 2008, Tata McGraw-Hill.
3. **Richard E.Mayer**, "Multimedia Learning", Second Edition, 2009, Cambridge University Press.
4. **Glencoe**, "Introduction to Multimedia", Student Edition, 2006, Tata McGraw-Hill.

E- REFERENCES:

1. www.tutorialfind.com/tutorials/multimedia
2. www.pdftutorials.com/multimedia/multimedia

III B.Sc. (CS)		Sub. Code
SEMESTER V	RDBMS LAB	Hrs/Week - 5
PRACTICAL V		Credits – 3

OBJECTIVE:

• To make the student aware of the Back-End tool.

EXERCISES:

1. DDL commands.
2. Specifying constraints-primary key, foreign key, unique, check, not null.
3. DML commands.
4. Joins.
5. Sub queries.
6. Creation of simple PL/SQL block using control constructs.
7. Creation of PL/SQL using exceptional handlers.
8. PL/SQL program blocks using implicit and explicit cursor.
9. PL/SQL program using procedures.
10. PL/SQL program using triggers.
11. Data Manipulation using PL/SQL.

III B.Sc. (CS)		Sub. Code
SEMESTER V	**ASP.NET PROGRAMMING LAB**	Hrs/Week - 5
PRACTICAL VI ELECTIVE II		Credits – 3

OBJECTIVE:

- To make students implement the concepts of ASP.Net.

EXERCISES:

1. Create a Website that contains various standard controls
2. Create a Website that demonstrates use of validator controls
3. Create a Website that contains adrotator and calendar controls.
4. Create a web application using web services.
5. Create a web application for storing and accessing database.
6. Create a web application for maintaining user states (Cookies etc.)

III B.Sc. (CS)		Sub. Code
SEMESTER V	ADVANCED JAVA PROGRAMMING	Hrs/Week - 5
PRACTICAL VI ELECTIVE II		Credits – 3

OBJECTIVE:

- To improve the programming skills of the students with respect to advance concepts of Java and to make the students to cop up with the latest programming concepts.

EXERCISES:

1. HTML to Servlet Applications
2. Applet to Servlet Communication
3. Designing online applications with JSP
4. Creating JSP program using JavaBeans
5. Working with Enterprise JavaBeans
6. Performing Java Database Connectivity.
7. Creating Web services with RMI.
8. Creating and Sending Email with Java
9. Building web applications

III B.Sc. (CS)		Sub. Code
SEMESTER VI	**MULTIMEDIA LAB**	Hrs/Week - 5
PRACTICAL VI ELECTIVE II		Credits – 3

OBJECTIVE:

- To make students implement various Multimedia applications.

EXERCISES:

FLASH

1. To Move an object, to move an object in the path.
2. Text flips, Text color change.
3. Creating a link using texts and objects, Change the color of the object.
4. Shape Tweening and using shape hints, Motion Tweening, Hybrid Tweening.
5. Character animation, Object animation, Drawing Images.
6. An Application to show the Masking effect.
7. Slide show presentation.

PHOTOSHOP

1. To create a Greeting card, Create background picture.
2. Text effects, Photo effects.
3. Color, Buttons.
4. Editing Images.
5. Designing Webpage.

DREAMWEAVER

1. Text Management.
2. Tables- Layers.
3. Creating Menu bar.
4. Creating pages and Sites.
5. Animation in Images.

OBJECTIVE:

- To make students understand the basic concepts of PHP programming.

UNIT – I   **15 Hrs**

Introducing PHP – Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators. Controlling Program Flow: Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

UNIT – II   15 Hrs

Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.

UNIT – III   15 Hrs

Using Functions and Classes: Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts.

UNIT – IV   15 Hrs

Working with Files and Directories: Reading Files-Writing Files- Processing Directories – Cookies – Session Management.

UNIT – V   15 Hrs

Working MySQL with PHP-database connectivity- Usage of MYSQL commands in PHP - Processing result sets of queries- Validating user input through Database layer and Application layer- Formatting query output with Character, Numeric, Date and time.

TEXT BOOKS:

1. **Vikram Vaswani,** "PHP A Beginner's Guide", Tata McGraw-Hill.
2. **Vikram Vaswani,** "How to do everything with PHP and MySql", Tata McGraw-Hill.

REFERNCE BOOKS:

1. **Rasmus Lerdorf, Kevin Tatroe** "Programming PHP", O'Reilly, ISBN 1565926102.
2. **Leon Atkinson** "Core PHP Programming", Prentice Hall, ISBN 0130463469.
3. **W. Jason Gilmore,** "Beginning PHP5 and MySQL: From Novice to Professional", 2004, Apress, ISBN: 1-893115-51-8
4. **Steven Holzner**, "The PHP Complete Reference", Tata McGraw-Hill Edition.
5. **Steven Holzer**, "Spring into PHP5", Tata McCraw Hill Edition

E-REFERENCES:

1. www.tutorialspoint.com/php/
2. http://www.w3schools.com/php/

III B.Sc. (CS)		Sub. Code
SEMESTER VI	PYTHON PROGRAMMING	Hrs/Week - 5
PAPER XIV		Credits – 4

OBJECTIVE:

- To make students understand the concepts of Python.

UNIT – I   **15 Hrs**

Introduction to Python – Values and types – Variables – Variable names and keywords – Operators and Operands-Expressions and Statements-Order of Operations-Comments. Functions: Function calls- Type conversion functions-Math functions – Definitions and uses_ Parameters and arguments- Local variables and parameters-Fruitful functions. Condtitionals and Recursion: Modulus operator – Boolean expressions – Logical operators-Conditional execution – Alternative execution- Chained conditionals-Nested Conditionals- Recursion.

UNIT – II   **15 Hrs**

Iteration-Multiple assignment-Updating variables-While statement- break- String – len-String slices- Looping and counting- String methods-in operator-String comparison.

UNIT – III   **15 Hrs**

Lists: List operations-list slices-list methods-Deleting elements-Lists and strings- Dictionaries: Dictionary as a set of counters-Looping and dictionaries-Reverse lookup- Global Variables.

UNIT – IV   **15 Hrs**

Tuples: Immutable-Tuple assignment-Tuples as return values- Lists and tuples- Dictionaries and tuples. Files: Reading and writing-Format operator- Filenames and Paths-Catching exceptions.

UNIT – V   **15 Hrs**

Classes and Objects: User-defined types-Attributes-Instances as return values. Classes and functions: Time-Pure functions-Modifiers. Classes and methods: Objecte oriented features-init method-str method-Operator overloading-Polymorphism- Inheritance- Class diagrams- Data encapsulation.

TEXT BOOK :

1. **Allen B. Downey O'Reilly** "Think Python: How to Think Like a Computer Scientist", Second Edition, 2015, O'Reilly Media, Inc.

REFERENCE BOOK :

1. Jeff McNeil , "Python 2.6 Text Processing: Beginners Guide ", PacktPub Publications . Mark Pilgrim ,"Dive Into Python" , Academic Press.

E- REFERENCES:

1. http://www.greenteapress.com/thinkpython/thinkpython.pdf

III B.Sc. (CS)		Sub. Code
SEMESTER VI	SOFTWARE ENGINEERING	Hrs/Week – 5
PAPER XV		Credits – 4

OBJECTIVE:

- To make students aware of the various stages in the development of Software.

UNIT – I 15 Hrs

The Nature of Software - Definition: Software, Software Engineering - Prescriptive Process Models - Prescriptive Process Models - The Waterfall Model - Incremental Process Model - Evolutionary Process Models - Concurrent Models

UNIT – II 15 Hrs

Requirements Analysis -Scenario-Based Modeling - UML Models That Supplement the Use Case - Data Modeling Concepts - Class-Based Modeling - Requirements Modeling Strategies - Flow-Oriented Modeling - Creating a Behavioral Model

UNIT – III 15 Hrs

The Design Process - Design Concepts - The Design Model - Designing Class-Based Components: Basic Design Principles - Component-Level Design Guidelines - Cohesion – Coupling - Designing Traditional Components - Graphical Design Notation - Tabular Design Notation - Program Design Language

UNIT – IV 15 Hrs

Elements of Software Quality Assurance - SQA Tasks, goals, and metrics - Software Testing Strategies - Unit Testing - Integration Testing - Validation Testing - Alpha and Beta Testing - System Testing – The Debugging Process - White-Box Testing - Basis Path Testing - Control Structure Testing - Black-Box Testing

UNIT – V 15 Hrs

Software Configuration Management - The SCM Repository - The SCM Process - Risk Management - Software Risks - Risk Identification - Risk Projection - Risk Refinement - Risk Mitigation, Monitoring, and Management - The RMMM Plan - Software Maintenance - Software Supportability – Software Reengineering - Reverse Engineering

TEXT BOOKS:

1. **Roger S. Pressman,** "Software Engineering - A practitioner's Approach", 7th edition, 2001, Tata McGraw-Hill International Edition.

REFERENCE BOOKS:

1. **Ian Sommerville,** "Software Engineering", 6th edition, 2000, Pearson education Asia,.
2. **Richard E. Fairley,** "Software Engineering Concepts", 2002, Tata McGraw-Hill edition.

E-REFERENCE:

http://ceit.aut.ac.ir/~91131079/SE2/SE2%20Website/Lecture%20Slides.html

III B.Sc. (CS)		Sub. Code
SEMESTER VI	**DATA MINING**	**Hrs/Week - 5**
PAPER XVI ELECTIVE III		**Credits – 5**

OBJECTIVE:

- To make students understand the concept of Data Mining.

UNIT – I   **15 Hrs**

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT – II   **15 Hrs**

Data Mining Techniques – a Statistical Perspective on data mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms.

UNIT – III   **15 Hrs**

Classification: Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques.

UNIT – IV   **15 Hrs**

Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms, Partitional Algorithms.

UNIT – V   **15 Hrs**

Association Rules: Introduction - Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – Measuring the Quality of Rules.

TEXT BOOK :

1. **Margaret H.Dunbam, "**Data Mining Introductory and Advanced Topics", 2003, Pearson Education.

REFERENCE BOOK :

1. **Jiawei Han & Micheline Kamber", "**Data Mining Concepts & Techniques", 2001 Academic Press.

E- REFERENCES:

1. http://books.google.co.in/books?id=O6F9iwsqZQwC&pg=PA13&source=gbs_selected_pages&cad=3#v=onepage&q&f=false
2. http://web.engr.illinois.edu/~hanj/bk2/

III B.Sc. (CS)		Sub. Code
SEMESTER VI	**UNIFIED MODELING LANGUAGE**	Hrs/Week - 5
PAPER XVI ELECTIVE III		Credits – 5

OBJECTIVE:

- To provide a standard way to visualize the design of a system in the field of software engineering.

UNIT- I 15Hrs

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture

UNIT -II 15Hrs

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams. Interfaces,Types and Roles, Packages. Class & Object Diagrams: Terms, Concepts, modeling techniques for Class & Object Diagrams.

UNIT - III 15Hrs

Basic Behavioral Modeling: Interactions, Interaction diagrams. Use cases, Use case Diagrams, Activity Diagrams.

UNIT - IV 15Hrs

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT- V 15Hrs

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.

<u>**TEXT BOOKS:**</u>

1. **Grady Booch, James Rumbaugh, Ivar Jacobson**, 2005, The Unified Modeling Language User Guide, Pearson Education.
2. **Hans-Erik Eriksson**, 2003, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

REFERENCE BOOKS

1. **Pascal Roques**, Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.

2. **Atul Kahate**,Object Oriented Analysis & Design, The McGraw-Hill Companies.

3. **Mark Priestley**, Practical Object-Oriented Design with UML,TATA McGrawHill.

E- REFERENCES:

1. https://www.utdallas.edu/~chung/Fujitsu/UML_2.0/Rumbaugh--
UML_2.0_Reference_CD.pdf

III B.Sc. (CS)	DIGITAL IMAGE PROCESSING	Sub. Code
SEMESTER VI		Hrs/Week - 5
PAPER XVI ELECTIVE III		Credits -5

OBJECTIVE:

- To provide knowledge of computer algorithms to perform image processing on digital images.

UNIT- I   **15Hrs**

Introduction – steps in image processing, Image acquisition, representation, sampling and quantization, relationship between pixels. – color models – basics of color image processing

UNIT – II   **15Hrs**

Image enhancement in spatial domain – some basic gray level transformations – histogram processing – enhancement using arithmetic , logic operations – basics of spatial filtering and smoothing

UNIT - III   **15Hrs**

Image enhancement in Frequency domain – Introduction to Fourier transform: 1- D, 2 –D DFT and its inverse transform, smoothing and sharpening filters.

UNIT – IV   **15Hrs**

Image restoration: Model of degradation and restoration process – noise models – restoration in the presence of noise- periodic noise reduction.. Image segmentation: Thresholding and region based segmentation.

UNIT - V   **15Hrs**

Image compression: Fundamentals – models – information theory – error free compression – Lossy compression: predictive and transform coding. JPEG standard

TEXT BOOK

1. **R.C. Gonzalez, R.E.Woods**, 2002, Digital Image processing, Second Edition, Pearson Education.

REFERENCE BOOKS

1. **Anil K. Jain**, 1994, Fundamentals of Digital image Processing, Second Edition, Prentice Hall of India, New Delhi.
2. **Pratt. W.K.**, 1978, Digital Image Processing, Third Edition, John Wiley & Sons.
3. **Rosenfled A. & Kak, A.C**, 1982, Digital Picture Processing, Vol .I & II, Academic

E- REFERENCES

1. http://web.ipac.caltech.edu/staff/fmasci/home/astro_refs/Digital_Image_Processing_2nd Ed.pdf

III B.Sc. (CS)	PHP AND PYTHON PROGRAMMING LAB	Sub. Code
SEMESTER VI		Hrs/Week - 5
PRACTICAL VII		Credits – 3

OBJECTIVE:

* To make students implement the basic concepts of PHP and PYTHON.

EXERCISES:

PHP
1. Write a PHP script to implement String, Numeric, Date and Time functions.
2. Write a PHP script using Indexed, Associative and Multidimensional arrays.
3. Write a server side PHP script that displays marks, total, grade of a student in tabular. format by accepting user inputs for name, number and marks from a HTML form[Do not use database].
4. Write a PHP script using two buttons to store Cookies and read Cookies' details.
5. Write a PHP script to demonstrate Session.
6. Write a PHP script to upload a file from client machine to the server machine.
7. Write a PHP script to create a directory, remove a directory and to read contents from the directory using choice menu.
8. Create a MySQL table and execute queries to read, add, remove and modify a record from that table.
9. Write a PHP script to access the employee data stored in a MySQL table. Use EmpNumber as input from a Form.

PYTHON

1. Program using Function .
2. Program using Recursive Function.
3. Program using Control Statements.
4. Program using Strings.
5. Program using Lists, Dictionaries and Tuples.
6. Program using Files.
7. Program using Classes and Objects.

III B.Sc. (CS)		Sub. Code
SEMESTER VI	MINI PROJECT	Hrs/Week - 5
PRACTICAL VIII		Credits – 5

OBJECTIVE:

- To make students to develop a simple application using current software technologies.