BACHELOR OF COMPUTER SCIENCE

SYLLABUS: 2017-18 Onwards

Dr. N.G.P ARTS AND SCIENCE COLLEGE (Autonomous)
(Re-Accredited with A Grade by NAAC)
(Affiliated to Bharathiar University,)
Dr. N.G.P. Nagar - Kalapatti Road
Coimbatore-641 048

BACHELOR OF SCIENCE (COMPUTER SCIENCE)
REGULATIONS

ELIGIBILITY

A candidate who has passed in Higher Secondary Examination with any Academic stream or Vocational stream as one of the subject under Higher Secondary Board of Examination, Tamilnadu as per the norms set by the Government of Tamilnadu or an Examination accepted as equivalent thereto by the Academic Council, subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the B.Sc Computer Science of this College after a course of study of three academic years.

PROGRAMME EDUCATIONAL OBJECTIVES

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

1. To provide adequate basic understanding about computer science and its application to the students.
2. To prepare students to exploit newly created opportunities in the field of computer science and its related field.
3. To give adequate exposure to the computing environment in the field of Software Development, Testing, Animation etc.
4. To inculcate training & practical approach by giving them internship training amongst the students in the field of computer science.
5. To create awareness of the global economy and training the players in the international business area.

Scheme of Examinations

Course Code	Course	Hrs. of Instruction	Exam Duration (Hrs.)	CA	CE	Total	Credit points
			Max Marks				
FIRST SEMESTER							
PART – I							
17UTL11T/ 17UHL11H/ 17UML11M/ 17UFL11F	Tamil-I/ Hindi-I/ Malayalam-I/ French-I	5	3	25	75	100	3
PART – II							
17UEG12F	English-I	5	3	25	75	100	3
PART – III							
17UCS13A	Core - I : C Programming	5	3	25	75	100	5
17UCS13P	Core Practical - I :C Programming	4	3	40	60	100	2
17UCS13Q	Core Practical - II: Open Source- LINUX	4	3	20	30	50	2
17UMT1AA	Allied –I :Basic Mathematics	5	3	25	75	100	4
PART – IV							
17UFC1FA	Value Education –Environmental Studies #	2	2	-	50	50	2
		30				600	21
SECOND SEMESTER							
PART – I							
17UTL21T/ 17UHL21H/ 17UML21M/ 17UFL21F	Tamil-II/ Hindi-II/ Malayalam-II/ French-II	5	3	25	75	100	3
PART – II							
17UEG22F	English-II	5	3	25	75	100	3
PART – III							
17UCS23A	Core - II : C++	5	3	25	75	100	4

BoS Chairman/HoD
Department of Computer Science
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Dr. P. R. MUTHUSWAMY
PRINCIPAL
Dr. NGP Arts and Science College
Dr. NGP - Kalapatti Road
Coimbatore - 641 048
Tamilnadu, India

17UCS23B	Core III: Digital Logic and Circuits	4	3	25	75	100	4
17UCS23P	Core Practical - III : C++ programming	4	3	40	60	100	2
17UMT2AA	Allied-II: Computer Based Optimization Techniques	5	3	25	75	100	4
PART IV							
17UFC2FA	Value Education -Human Rights #	2	2	-	50	50	2
		30				**650**	**22**
THIRD SEMESTER							
PART – III							
17UCS33A	Core - IV : Data Structures	5	3	25	75	100	5
17UCS33B	Core - V : Java Programming	5	3	25	75	100	5
17UCS33P	Core Practical - IV : Java Programming	4	3	30	45	75	2
17UCS3AA	Allied-III: Management Information System	4	3	20	55	75	4
17UCS3SA	Skill Based Course - I : Basics of web designing	4	3	20	55	75	4
17UCS3SP	Skill Based Practical- I : Basics of web designing Lab	4	3	30	45	75	2
PART IV							

17UFC3FA/ 17UFC3FB/ 17UFC3FC/ 17UFC3FD/ 17UFC3FE	Tamil# / Advanced Tamil# (OR) Yoga for Human Excellence # / Women's Rights# / Constitution of India#	2	2	-	50	50	2
	NMEC- I	2	2	-	50	50	2
		30				**600**	**26**

FOURTH SEMESTER

		PART – III					
17UCS43A	Core - VI : System Software and Operating Systems	5	3	25	75	100	5
17UCS43B	Core - VII : Relational Database Management System	5	3	25	75	100	5
17UCS43P	Core Practical - V: Relational Data Base Management System	4	3	30	45	75	2
17UCS4AA	Allied - IV: Cyber Security	4	3	20	55	75	4
17UCS4SA	Skill Based Course- II : Multimedia & Animation	4	3	20	55	75	4
17UCS4SP	Skill Based Practical-II: Multimedia and Animation	4	3	30	45	75	2
		PART – IV					
17UFC4FA/ 17UFC4FB/	Tamil # /Advanced	2	2	-	50	50	2

17UFC4FC	Tamil # (OR) General Awareness #							
	NMEC- II	2	2	-	50	50	2
		30				**600**	**26**

FIFTH SEMESTER

PART – III

17UCS53A	Core - VIII: Data Communication And Networks	5	3	25	75	100	5
17UCS53B	Core-IX DOTNET Programming	5	3	25	75	100	5
17UCS53C	Core – X: Python Programming	5	3	20	55	75	4
17UCS53P	Core Practical - VI: Programming in DOTNET	5	3	25	75	100	2
17UCS53Q	Core Practical - VII : Python Programming-Lab	5	3	30	45	75	2
	Elective - I	5	3	20	55	75	4

PART - V

17UCS53T	Industrial Training	Grade A to C					
		30				**525**	**22**

SIXTH SEMESTER

PART – III

17UCS63A	Core- XI: PHP & MySQL	6	3	25	75	100	5
17UCS63B	Core – XII : Fundamentals of Cloud Computing	5	3	20	55	75	4
17UCS63P	Core Practical - VIII : PHP & MySQL	5	3	30	45	75	2

17UCS63V	Core Practical -IX : Project Work	4	3	30	45	75	2
	Elective -II	5	3	20	55	75	4
	Elective -III	5	3	20	55	75	4
PART – V							
17UEX65A	Extension Activity@	-	-	50	-	50	2
		30				**525**	**23**
			Grand Total			**3500**	**140**

@ Extension Activities –Sports/NSS/NCC/YRC/ Association activities/Club activities- No End semester Examinations. Only Internal Assessment (IA)

 # No Continuous Internal Assessment (CIA). Only End semester Examinations.

ELECTIVE – I

(Student shall select any one of the following courses as Elective-I in fifth semester)

S.No.	Course Code	Name of the Course
1.	17UCS5EA	E-Learning
2.	17UCS5EB	Computer Networks
3.	17UCS5EC	Unified Modeling Language

ELECTIVE - II

(Student shall select any one of the following courses as Elective-II in sixth semester).

S.No.	Course Code	Name of the Course
1.	17UCS6EA	Network Security and Cryptography
2.	17UCS6EB	Artificial Intelligence & Expert System
3.	17UCS6EC	Mobile Computing

ELECTIVE - III

(Student shall select any one of the following courses as Elective-III in sixth semester)

S.No.	Course Code	Name of the Course
1.	17UCS6ED	Data Mining
2.	17UCS6EE	Open Source Software
3.	17UCS6EF	XML & Web Services

NON MAJOR ELECTIVE COURSES

- The department offers the following two papers as Non Major Elective Courses for other than the computer studies related students.

- Student shall select any one of the following courses as Non Major Elective Courses during their III and IV semester

No.	Semester	Course Code	Course Title
NMEC- I	III	17UNM34	Office Automation-Lab
NMEC- II	IV	17UNM44	Web Designing -Lab

Total Credit Distribution

Course	Papers	Credits	Total Marks		Total Credits	Cumulative Total
Part I: Tamil	2	3	2 x100	200	2x3=6	12
Part II: English	2	3	2x100	200	2x3=6	
Part III:						
Core Theory	8	5	8x100	800	8x5= 40	114
Core Theory	2	4	2x100	200	2x4=8	
Core Theory	2	4	2x75	150	2x4=8	
Core Practical	3	2	3x100	300	3x2=6	
Core Practical	4	2	4x75	300	4x2=8	
Core Practical	1	2	1x50	50	1x2=2	
Project Work	1	2	1x75	75	1x2=2	
Allied Theory	2	4	2x100	200	2x4=8	
Allied Theory	2	4	2x75	150	2x4=8	
Elective	3	4	3x75	225	3x4=12	
Skill Based Course(Theory)	2	4	2x75	150	2x4=8	
Skill Based Course(Practical)	2	2	2x75	150	2x2=4	
Part IV:						
Basic /Advanced Tamil, Foundation Course & Value Education	4	2	4x50	200	4x2=8	12
NMEC	2	2	2x50	100	2x2=4	
Part V:						
Extension Activity	1	2	1x50	50	1x2=2	2
Total				**3500**	**140**	**140**

FOR PROGRAMME COMPLETION

A student has to complete the following –

- Language papers (Tamil/Malayalam/French/Hindi, English) in I and II semester.
- Environmental Studies in I and II semester respectively.
- Value Added Courses in I and II semester respectively.
- Allied papers in I, II, III and IV semesters.
- Skill based subject in III, IV and V semesters
- NMEC Course in the III and IV semesters.
- Extension activity in VI semester.
- Elective papers in the V and VI semesters.
- An in-house project at the end of VI semester.

- Industrial training: Subject code: 17UCS53T.

  - Students must undergo Industrial training for 15 – 30 days during IV Semester Summer Vacation. Evaluation of the Report is done by the Internal and External Examiner in the V Semester. Based on their performance Grade will be awarded as A to D.

    A- 75marks and above

    B- 60-74 marks

    C- 40-59 marks

    D- Below 40 marks - (RA)

Earning Extra credits is not mandatory for programme completion
Extra credits

S.No.	Course	Credit	Total credits
1	BEC/ Self study courses	1	1
2	Hindi / French/ Other foreign Language approved by certified Institutions	1	1
3	Type Writing / Short Hand Course	1	1
4	Diploma/certificate/CPT/ ACS Inter/ NPTEL Course	1	1
5	Representation – Academic/Sports /Social Activities/ Extra Curricular / Co-Curricular activities at University/ District/ State/ National/ International	1	1
Total			5

Rules:

The students can earn extra credits only if they complete the above during the programme period (I to V SEM) and based on the following criteria. Proof of Completion must be submitted in the office of the Controller of Examinations before the commencement of the VI Semester. (Earning Extra credits are not mandatory for programme completion)

1. Student can opt BEC course/ Self study course to earn one credit. They have to enroll and complete any one of the course during their programme period before fifth semester (I Sem to V Sem).

Self study paper offered by the Department of Computer Science

S. No.	Semester	Course Code	Course Title
1.	III	17UCSSS1	Data Science and Big Data Analytics
2.		17UCSSS2	Enterprise Resource Planning

2. Student can opt Hindi/ French/ Other foreign Language approved by certified Institutions to earn one credit. The certificate (Hindi) must be obtained from **Dakshina Bharat Hindi Prachar Sabha** and He/ She has to enroll and complete during their programme period (**first to fifth semester).**

3. Student can opt for Type writing /short hand course to earn one extra credit. He/She has to enroll and complete the course during their programme period to obtain certificate through **Tamil Nadu Board of Technical Education.**

4. Student can opt for Diploma/certificate/CPT/ACS Inter/ NPTEL Course to earn one extra credit. Student who opt for Diploma/ Certificate course have to enroll any diploma/certificate course offered by Bharathiar University through our Institution. Student who opt for CPT/ ACS/CMA have to enroll and complete the foundation level during the programme period. Students who opt for NPTEL course should complete the course certificate through NPTEL.

5. Award Winners in Academic/ Representation in Sports /Social Activities/ Extra Curricular/ Co-Curricular Activities at University/ District/ State/ National/ International level can earn one extra credit.

PROGRAMME OUTCOMES

On the successful completion of the programme, students will have

PO NO.	PROGRAMME OUTCOMES
PO1	An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline.
PO2	An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
PO3	An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
PO4	An understanding of professional, ethical, legal, security and social issues and responsibilities.
PO5	An ability to communicate effectively with a range of audiences.

17UCS13A	CORE- I: C PROGRAMMING	SEMESTER - I

PREAMBLE:

- This course is offered in the first semester of B.Sc Computer Science, on successful completion the students will earn Five Credits.

- This course aims at making the student familiar with components of C programming language.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of C programming.	K1
CO2	Understand the principles of control structures and array.	K2
CO3	Apply the knowledge of strings and functions.	K3
CO4	Build programs using structures, unions and pointers.	K2
CO5	Expose the concepts of file management and error handling.	K2

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS13A	CORE- I: C PROGRAMMING	SEMESTER - I

Total Credits: 5
Hours Per week: 5

CONTENTS

UNIT - I

Overview of C: History of C – Importance of C – Basic structure of C programs. Constants, variables and data types: Character set – C Tokens – Keywords and identifiers – Constants – Variables – Declaration of storage classes – Assigning values to variables Defining symbolic constants. Operators and expressions – Evaluation of expressions – Precedence of arithmetic operators – Type conversions in expressions – Operator precedence and associativity – Mathematical functions. Managing input and output operations: Reading and writing a character – Formatted input and output.

UNIT - II

Decision making and branching: Simple IF, IF-ELSE, Nesting of IF-ELSE, ELSE-IF ladder, Switch statements – GOTO statements. Decision making and looping: WHILE statement – DO statement – FOR statement – Jumps in loops. Arrays: Definition & Declaration – One dimensional – Two dimensional – Multi dimensional arrays.

UNIT - III

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – String handling functions. User Defined functions: Introduction – Needs & Elements of User Defined function –Definition – Return values and their types – Function calls – Function declaration – Category of

functions – Nesting of functions – Recursion – Passing arrays and Strings to functions – The scope, lifetime & Visibility of Variables.

UNIT - IV

Structures and Unions: Introduction – Defining a structure – Declaring structure variables – Accessing structure members – Structure initialization – Arrays of structures – Arrays within structures – Structures within structures – Structures and functions – Unions – Bit fields. Pointers: Introduction – Understanding pointers – Accessing the address of a variable – Initializing of pointer variables. Pointers and arrays – Pointers and character strings – Pointers as function arguments.

UNIT - V

File Management: Introduction – Defining and opening a file –Closing a file – Input / Output operation on files – Error handling during I/O operations – Random access files – Command line arguments.

TEXT BOOK:

1. Programming in ANSI C, E. Balagurusamy, Tata McGraw Hill Publication, 7th Edition,2017

REFERENCE BOOKS:

1. C: The complete Reference, Herbert Schildt, 4th Edition , 2000, Tata McGraw Hill Publication.
2. Programming in C, B.L. Juneja, 1st Edition, 2011, Cengage Learning India Publication.

17UCS13P	CORE PRACTICAL -I : C PROGRAMMING	SEMESTER - I

Total Credits: 2
Hours Per week: 4

PREAMBLE:

- To impart knowledge on C programming.

- To gain experience about structured programming

- To understand the implementation of C language

CONTENTS

1. Write a C program to find the sum, average, standard deviation for a given set of numbers.
2. Write a C program to generate "n" prime numbers.
3. Write a C program to generate Fibonacci series.
4. Write a C program to print magic square of order n where n > 3 and n is odd.
5. Write a C program to sort the given set of numbers in ascending order.
6. Write a C program to check whether the given string is a palindrome or not using pointers.
7. Write a C program to count the number of Vowels in the given sentence.
8. Write a C program to find the factorial of a given number using recursive function.
9. Write a C program to print the student's Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.
10. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.
11. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file.
12. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total

  i) no of chars   ii) no. of words and   iii) no. of lines.

17UCS13Q	CORE PRACTICAL -II : OPEN SOURCE - LINUX	SEMESTER - I

Total Credits: 2
Hours Per week: 4

PREAMBLE:

- To impart knowledge on basic commands skills.

- To gain experience about Office applications.

- To understand and gain knowledge of LINUX Environment.

CONTENTS

1. To open a new open office document and perform the following operations in it.
i. Text Alignment
ii. Change line spacing to 1.5
iii. Place a box to the entire text
iv. Add the bullets and numbering
v. Change type of font types and sizes
vi. Insert the symbols

2. To prepare an advertisement to a company with the following specifications
i. Attractive Page Border.
ii. Design the name of company using WordArt.
iii. Use ClipArt
Using of Open Office writer.

3. To design a Visiting Card for a company following specification
i. Size of the Visiting Card 4" X 3".
ii. Name of the company with a Word Art.
iii. Using of Open Office writer.

4. To perform Table Creation, Formatting and Conversion using OpenOffice.org.

5. To perform mail merge and letter preparation using OpenOffice.org.

6. To draw a flow chart for a given problem in the OpenOffice.org.

7. To perform the formula editor in OpenOffice.org Calc .

8. To perform the insertion of objects, graphics and protecting the document in OpenOffice.org Calc

9. To Draw a line, XY, bar and pie chart for a given user data in OpenOffice.org Calc to perform the sorting and import/export features.

10. Creating an Impress Presentation using wizard

11. Create a presentation on Tourism of a place using different template, color schema and text formats

12. Create a presentation about your college and department using animations and sound effects. Add OLE object to your presentation.

17UMT1AA	ALLIED-I :BASIC MATHEMATICS	SEMESTER – I

PREAMBLE:

- On successful completion of this subject the students will be able to understand the basic concepts of Mathematics.
- To know about the applications of Statistical and Numerical Techniques of Mathematics.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO 1	Learn about Numerical Differentiation	K1
CO 2	Learn about Numerical Integration	K1
CO 3	Apply Statistical Techniques for data collection	K2
CO 4	Solve the problems related to Measures of central tendency	K2
CO 5	Solve the problems related to System of Simultaneous Linear Algebraic Equation	K3

Mapping with Programme Outcomes

COS/POS	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	S	M	M	L
CO 2	M	S	S	M	L
CO 3	S	S	M	M	L
CO 4	S	S	M	M	M
CO 5	L	M	M	S	S

S- Strong; M-Medium ;L-Low

17UMT1AA	ALLIED-I :BASIC MATHEMATICS	SEMESTER – I

Total Credits: 4
Hours PerWeek:5

CONTENTS

UNIT - I

System of Simultaneous Linear algebraic Equation: Gauss elimination - Gauss Jacobi Gauss Jordon - Gauss Seidal methods.

UNIT - II

Numerical Differentiations : Newton's forward Difference - Backward Difference -Stirling's formula.

UNIT - III

Numerical Integration :Trapezoidal Rule & Simpson's rule - Numerical solutions of ordinary differential Equations : Taylor series for first order derivative.

UNIT - IV

Statistics: Meaning - Definition – Collection of data - Classification and Tabulation – Diagrammatic Representation and Graphical Representation.

UNIT-V

Measures of Central Tendency : Mean – Median – Mode - Measures of dispersion :Range – Standard deviation.

TEXT BOOKS:

1. *Kandasamy,P.and Thilagavathi ,K.* 2004. **Numerical Methods** **.**S.Chand and Company Ltd., New Delhi. (Unit I , II &III)

2. *R.S.N.Pillai,V.Bagavathi*.2002. **Statistics.** S.Chand and Company Pvt. Ltd (Unit IV & V).

REFERENCE BOOKS:

1. *Gupta, S.P. and Gupta, M.P* . 2002. **Business Statistics .** Sultan Chand and Sons.

2. *Venkataraman , M.K.* 2004. **Numerical Methods in Science & Engineering** . NPC . Revised Edition

17UCS23A	CORE - II : C++ PROGRAMMING	SEMESTER - II

PREAMBLE:

- This course is offered in the second semester of B.Sc Computer Science, on successful completion the students will earn Four Credits.
- This course aims at making the student familiar with object oriented programming.
- This course helps to write clear, elementary C++ programs and understand the logic of the problem and apply techniques to solve it.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the key concepts of OOPs , input/output and control structures.	K1
CO2	Demonstrate structure of functions, classes and objects.	K2
CO3	Apply the knowledge of operators, overloading & inheritance	K3
CO4	Usage of pointer, Arrays & Virtual functions	K3
CO5	Apply the concepts of string & file handling functions	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS23A	CORE - II : C++ PROGRAMMING	SEMESTER - II

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT - I

Introduction to C++: key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages I/O in C++: Streams in C++- Predefined Streams-Buffering – Stream Classes- Formatted and Unformatted data- Unformatted Console I/O Operation – Type casting with cout statements- C++ Declarations.

Control Structures: Decision Making and Statements: If Else, Jump, Goto, Break, Continue, Switch Case statements. Loops in C++: For, While, Do.

UNIT - II

Functions in C++: Parts of Function – Passing Arguments - Inline functions –Function overloading. Classes and Objects: Classes in C++- Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions.

Constructor and Destructor: Constructor and Destructor **-** Characteristics – Application with constructors-Overloading Constructor-Destructors.

UNIT - III

Operator Overloading: The Keyword Operator- Overloading unary, binary operators – Overloading Friend functions – type conversion.

Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT - IV

Pointers: Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes.

Arrays: Characteristics – Initialization of arrays using functions-Memory models – new and delete operators – dynamic object.

Virtual Functions: Rules for Virtual Functions -Pure Virtual Functions.

UNIT - V

String – Declaring and Initializing string objects – String Attributes.

Files – File stream classes – file modes – Sequential Read / Write operations- Error Handling Functions-Exception Handling.

TEXT BOOK:

1. *Ashok N. Kamthane*. 2013. Object-Oriented Programming with ANSI and TURBO C++, Pearson Education Publication, 2nd Edition.

REFERENCE BOOKS:

1. *E. Balagurusamy*. 2005. Object-Oriented Programming with C++, Tata Mc-Graw Hill Publication.
2. *Yashvant. P. Kanetkar*. 2007. Let us C++, BPB, New Delhi.

17UCS23B	CORE -III : DIGITAL LOGIC AND CIRCUITS	SEMESTER II

PREAMBLE:

- This course is offered in the second semester of B.Sc Computer Science, on successful completion the students will earn Four Credits.

- This course aims at making the student familiar with digital logic and functional design of arithmetic and logic unit that is capable of performing floating point arithmetic operations. The CPU and the organization of memory are explored.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Illustrate the digital representations & Arithmetic Operations	K1
CO2	Understand the functional concepts of Logic gates	K2
CO3	Analyze the concept of Boolean Algebra & its simplifications	K2,K3
CO4	Acquire knowledge of Logic Circuits	K1,k2
CO5	Interpret the functions of bit storage components	K2,K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS23B	CORE -III : DIGITAL LOGIC AND CIRCUITS	SEMESTER - II

Total Credits: 4
Hours Per week: 4

CONTENTS

UNIT –I

Number Systems: Decimal Number System – Binary Number System – Conversion of decimal to binary and binary to decimal conversions. Complements: 1's complement and 2's complement Number representation. Binary addition, Binary subtraction, Binary addition and subtraction using Complement Systems.

UNIT – II

Logic Gates: Gates Classifications: Basic Gates (AND, OR, NOT), Universal Gates (NAND, NOR), Exclusive Gates (XOR, XNOR) (except circuit diagrams) – Logic Symbols, Logic Operators, Logical expression and truth table of Basic, Universal and Exclusive gates. Conversion of Universal Gates to Basic Gates.

UNIT – III

Boolean Algebra & Simplifications: Boolean Theorems (Rules & Verification with sample values only) –reduction of expression using Sum of product Simplification –reduction of expression using Product of Sum Simplification – The K- Map method: 2 variable maps, 3-varibale map and 4-variable map.

UNIT – IV

Arithmetic Circuits & Combination Circuits: Half adder – Full adder – Half Subtractor – Full –Parallel binary adder, decimal adder (BCD adder)

- Encoder – Multiplexers – De-Multiplexers (Block Diagram, Truth Table, Circuit Diagram of above devices).

UNIT – V

Storage elements & Counters: Flip – Flops types: RS, Clocked RS, Positive Edge triggered- RS, D-Flip Flop, T-Flip Flop, JK-Flip Flop (Block Diagram, Truth Table, Circuit Diagram and Working Methodology). Counter: Ripple Counter, Modulo N Counter – Shift registers- types: PIPO (Parallel- in-Parallel-out), PISO (Parallel-in-Serial-out), SISO (Serial - in-Serial- out), and SIPO (Serial- in-Parallel-out).

TEXT BOOK:

1.R K Gaur, Digital Electronics and Microcomputers, 3rd edition, Dhanpat Rai Publications (P) Ltd.,2012.

REFERENCE BOOK:

1. Morris Mano, Computer System Architecture, 3rd edition, PHI., 2016

17UCS23P	CORE PRACTICAL -III : C++ PROGRAMMING	SEMESTER - II

Total Credits: 2
Hours Per week: 4

PREAMBLE:

- To inculcate knowledge on Object-oriented programming concepts using C++.

- Introduce different techniques pertaining problem solving skills

- Arm the students with the necessary constructs of C++ programming.

CONTENTS

1. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write a Member function ADD (), SUB (), MUL (), DIV () to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.

2. Write a C++ Program to create a class using array of objects.

3. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.

4. Write a C++ Program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.

5. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display strings. Overload the Operator —+   to Concatenate two Strings, —= =   to Compare two strings.

6. Write a C++ Program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic Salary, Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade using Multiple Inheritance.

7. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various shapes. Derive three classes SQUARE, RECTANGLE, TRIANGLE from class Shape and Calculate Area and Perimeter of each class separately and display the result.

8. Write a C++ Program using FRIEND FUNCTION

9. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.

10. Write a C++ Program to check whether the given string is a palindrome or not using Pointers.

11. Write a C++ Program to create a File and to display the contents of that file with line numbers.

12. Write a C++ Program to merge two files into a single file.

17UMT2AA	ALLIED-II :COMPUTER BASED OPTIMIZATION TECHNIQUES	SEMESTER- II

PREAMBLE:

- On successful completion of this subject the students will be able to understand various mathematical applications in industries.

- Decision making for real time Problems.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO 1	Learn about Linear Programming Problem	K1
CO 2	Learn about Elements of Queuing System	K1
CO 3	Apply game theory to analyze different situations of each player	K2
CO 4	Apply Mathematical Techniques to find solution in the real life situations	K2
CO 5	Solve the problems related to Network Analysis	K3
CO 6	Solve the problems related to Transportation and Assignment	K3

Mapping with Programme Outcomes

COS/POS	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	S	M	M	L
CO 2	M	S	S	M	L
CO 3	S	S	M	M	L
CO 4	S	S	M	M	M
CO 5	L	M	M	S	S

S- Strong; M-Medium; L-Low

17UMT2AA	ALLIED-II :COMPUTER BASED OPTIMIZATION TECHNIQUES	SEMESTER- II

Credit Points: 4
Hours Per Week:5

CONTENTS

UNIT - I

Linear Programming : Mathematical formulations of linear Programming -Graphical method - Simplex method.

UNIT - II

Transportation Problem - Assignment Problem - Traveling Salesman Problem.

UNIT - III

Game Theory : Concept of Pure and Mixed Strategies -Solving 2 x 2 Matrix with and without saddle point -n x 2 -2 x m games.

UNIT-IV (Derivations not included)

Queueing Theory : Introduction – Queuing system – Characteristics of Queuing system – symbols and Notation – Classifications of queues – Problems in (M/M/1) : (∞/FIFO).

UNIT-V

PERT & CPM : Network representation -Backward pass -Forward pass -Computation -PERT Network -Probability factor .

TEXT BOOK:

 Manmohan, Gupta, P.K and Kanthiswarup. 1997. **Operations Research.** S. Chand & sons.

REFERENCE BOOKS:

Hamdy A Taha. 2002. **Operations Research.** Pearson Education. 7th edition.

Gupta, P.K. and Hira, D.S. 2004. **Problems in Operations Research.** S. Chand Publication.

17UCS33A	CORE IV: DATA STRUCTURES	SEMESTER - III

PREAMBLE:
- To understand and analyze algorithms
- To learn fundamentals of linear and non-linear Data structures
- To be familiar with searching and sorting

Course Outcomes

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

CO Number	CO Statements	Knowledge Level
CO1	Define and analyze the structure of algorithms	K1
CO2	Explain the principles of linear and non-linear data structures	K2
CO3	Apply the knowledge of searching procedures.	K3
CO4	Build algorithms for graph representation.	K3
CO5	Demonstrate the concept of sorting techniques.	K2

Mapping with Programme Outcomes

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

(S-Strong, M-Medium, L-Low)

17UCS33A	CORE IV: DATA STRUCTURES	SEMESTER - III

Total Credits: 5
Hours Per week: 5

CONTENTS

UNIT - I

Introduction: Introduction of Algorithms, Performance Analysis. **Arrays and structures**: Representation of Arrays, Array create, insert and delete of data elements - Sparse Matrices **Stacks and Queues**: Stacks - Queues - Circular Queues - Evaluation of Expression -Infix to Postfix Conversion.

UNIT - II

Linked List: Singly Linked List: Insertion – Deletion – Reverse the elements - Linked Stacks and Queues - Polynomial Addition – Circular Linked Lists - Doubly Linked List.

UNIT - III

Trees: Basic Terminology and Representation - Binary Trees - Binary Tree Representations - Binary Trees Traversals - Threaded Binary Trees - Binary Search Trees – Search, Insert, Delete- Efficient Binary Search trees: AVL trees

UNIT - IV

Graphs: Terminology and Representations – **Traversals**: Depth First Search, Breadth First Search – Minimum cost Spanning Trees- Shortest Paths and Transitive Closure

UNIT V:

Searching: Linear and Binary Search **Sorting:** Bubble sort - Insertion Sort - Quick Sort - Merge Sort - Heap Sort - **Hashing Techniques** : Static Hashing : Hash Tables - Hashing Functions - Overflow Handling - Dynamic Hashing : Directories

TEXT BOOKS:

1. Horowitz, Shani, Anderson - Freed   Fundamentals of Data Structures in C [2nd Edition] Universities Press. (UNIT I to V).

REFERENCE BOOKS:

1. Ellis Horowitz, Sartaj Shani, "Data and File Structures", Galgotia Publication (UNIT IV & V).

2. Malik,D,S., 2003. Data structures using C++ [1st Edition] Cengage learning

3. Vaugha H.Patil, 2012. Data Structures Using C++[1st Edition] Oxford Higher Education

17UCS33B	CORE V: JAVA PROGRAMMING	SEMESTER - III

PREAMBLE:

- This course aims to provide a basic knowledge on applying object oriented programming in Java
- Helps in developing various application programs using Java

Course Outcomes

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

CO No.	CO. Statement	Knowledge Level
1	Understand the format and use of objects.	K1
2	Learn basic input/output methods and their use.	K1
3	Apply inheritance, interface, exception, packages and its use.	K3
4	Analyze JAVA applets concepts and JAVA applications concepts.	K4
5	Understand the use of various system libraries and to develop the JAVA applets and application programs.	K1

Mapping with Programme Outcomes

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

(S-Strong, M-Medium, L-Low)

17UCS33B	CORE V: JAVA PROGRAMMING	SEMESTER - III

Total Credits: 5
Hours Per week: 5

CONTENTS

UNIT - I

Introduction to Object-Oriented Programming – The Java language – Variable Declarations and Arrays – Operators in Java.

Control Statements: An Introduction – Selection Constructs – Iteration Constructs – Jump Constructs .

Introduction to Classes: Instance variables – Class variables – Instance Methods – Constructors – Class Methods – Declaring Objects

UNIT - II

Classes and Methods in Detail: Method Overloading – Constructor Overloading – The this Reference – Using Objects in Method – Recursion – Access Modifiers – Inner Classes – Command Line Arguments. Inheritance: Basics of Inheritance – Super Class Variable and Subclass Object – The super reference – Constructor Chaining – Method Overriding – The final Keyword.

Abstract Classes and Interfaces: The abstract Classes and Methods – Defining Interface – Implementing Interfaces – Extending Interface – Interface Reference.

Exception Handling: Types of Exceptions-Uncaught Exceptions – Handling Exceptions – User Defined Exceptions

UNIT - III

Multithreaded Programming: Concept of Threads – Thread Creation – Thread's Life Cycle – Thread Scheduling – Synchronization and Deadlock.

Packages and Access Modifiers: Packages – An Introduction – The package Declaration – The import Statement – Illustration Package – The Java Language Packages.

Handling Strings: Creating Strings – Operations on Strings – Character Extractor Methods – String Comparison Methods.

UNIT - IV

Input Output Classes: Input and Output Operations – Hierarchy of classes in java.io Package – File class – InputStream and OutputStream-RandomAccessFile Class.

Applets: Applet Basics – Applet Life Cycle – Running Applets – Methods of the Applet Class.

UNIT - V

Abstract Windowing Toolkit : AWT classes – Hierarchy of Classes – Control Fundamentals – Component Class – Basic Component Classes – Various Container Classes – Frame Window in an Applet – Menus. Layout Management and Event Handling: Layout Management Policies – Standard Layout Managers – Handling Events – Hierarchy of Event Classes – Event Delegation Model – Event Classes – Event Listener Interfaces – Adapter Classes.

TEXT BOOK:

1. Instructional Software Research and Development (ISRD) Group.2007. "Introduction to Object Oriented Programming through Java", Tata McGraw-Hill Publishing Company Limited, New Delhi.

REFERENCE BOOK:

1. E.BalaGurusamy, 2007. Third Edition." Programming with JAVA – A Primer", Tata McGraw-Hill Publishing Company Limited, Third Edition.

2. John R. Hubbard. 2007. " Schaum's Outline of Programming with Java", Tata McGraw- Hill Publishing Company Limited, Second Edition.

17UCS33P	**CORE PRACTICAL IV:** **JAVA PROGRAMMING**	**SEMESTER - III**

Total Credits: 2
Hours Per week: 4

PREAMBLE:

- Understand the basic concepts of Data Structures and implement it using Java.
- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- This subject deals with Java Programming concepts where it enables us to create wide range of Applications and Applets using Java.

CONTENTS

1. Write a Java program to implement Stack using array.
2. Write a Java program to implement Queue using array.
3. Write a Java Program to implement linked list.
4. Write a Java Program to implement binary search and linear search using recursive and non recursive functions.
5. Write a Java program to implement insertion sort
6. Write a Java Program that reads an infix expression and converts it into postfix form.
7. Write a Java Program to implement the declaration of different types of variables and operators in Java.
8. Write a Java program to implement the concept of classes and objects.
9. Write a Java Program to implement the concept of overloading in Java.
10. Write a Java Program to implement the concept of Inheritance in Java.
11. Write a Java Program that illustrates the following.
   a. Handling pre defined exceptions.
   b. Handling user defined exceptions.
12. Write a Java Program that illustrates the following.

   a. Creation of single package
   b. Accessing a Package.
   c. Implementing interfaces.
13. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.
14. Write a Java Program to create a frame with four text fields name, street, city and pin code with suitable tables. Also add a button called —my details, when the button is clicked its corresponding values are to be appeared in the text fields.
15. Write a Java Program to create Menu Bars and pull down menus.

17UCS3AA	Allied III: MANAGEMENT INFORMATION SYSTEM	SEMESTER - III

PREAMBLE:

- This course is offered in the third semester of B.Sc Computer Science, on successful completion the students will earn Four Credits.

- This course provides deep understanding of the business and professional responsibilities related to the use of information systems in organizations.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Understanding and apply Management Information Systems knowledge and skills learned to facilitate the acquisition, development, deployment, and management of information systems.	K1
CO2	Understanding fundamental database concepts and apply these concepts to the design and development of relational databases.	K2
CO3	Understand the leadership role of Management Information Systems in achieving business competitive advantage through informed decision-making.	K3
CO4	Demonstrate an understanding of the major functional areas of Business.	K2
CO5	Learning fundamental concepts of data communications, computer networking, information security and the information assurance.	K2

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS3AA	Allied III: MANAGEMENT INFORMATION SYSTEM	SEMESTER - III

Total Credits: 4
Hours Per week: 4

CONTENTS

UNIT – I

Information Systems in the Knowledge Economy : The Internet and Everyday Life – The Evolving Paradigms of Computing – Levels of IT Use – Information Systems for Management Effectiveness – MIS: A Tool for Management Process – Systems Approach – Business Processes and Functional Area of Business – Goals, Objectives and Targets – Role of CIO – Phases in Building and Maintaining Systems – Case Study Akshaya Project.

UNIT – II

Information Systems for Driving Innovations: Case Study ITC's e-Choupal – Business Model – Information Technology as a Driving force for Innovation – Value Chain Strategy – Management and Information Requirements – Geographical Information Systems.

UNIT – III

Database Design and Process Modeling: Case Study: e-Bay Providing Online Auctions for Personal Property: Transformation of Data into Information – Types of Data – Database Management Systems – Evaluation a Database as a Resource – Organizing Data in a Database – The Process of Accessing Data – Database Design – Relational Data Model – Database Design Phase – The Data flow approach to requirements determination- Developing Dataflow Diagram – Logical and Physical Data Flow Diagrams – Data Modeling: Defining and Organizing Data.

UNIT – IV

Decision Support and Expert Systems : Case Study : American Express Credit Authorization – Typical Online Authorization, Non-Internet Payment Device – Need for Decision Support – Decision Support -OLAP – Rational Decision Making- The Modelling Process – Rule-Based Representation. Computer Communication Systems : Case Study : Federal Express Applies Telecommunications to Business – Transmission Control Protocol (TCP) – Protocol Interface – Information Systems for Mobile Commerce : Mobile Commerce.

UNIT – V

Knowledge Management Applications in Business Functions: Case Study: E-Supply Chain at Cisco – Human Resource Information Systems - Information System Security – Legal and Ethical Issues.

TEXT BOOK:

1. Management Information System in the Knowledge Economy, Second Edition, P.T.Joseph, S.J and Sanjay Mohapatra. PHI Learning Private Limited.

REFERENCE BOOK:

1. James A O'Brien, George M Marakas, Ramesh Batil , Management Information Systems, Ninth Edition, TMH,.

17UCS3SA	SKILL BASED COURSE I: BASICS OF WEB DESIGNING	SEMESTER - III

PREAMBLE:
- This course aims at making the student familiar with basics of HTML and an understanding on designing an dynamic web page..
- To have hands on experience in web designing.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic HTML commands.	K1
CO2	Understands the basic structure of Java script	K2
CO3	Ability to understand and develop using java script.	K2, K3
CO4	To know the concepts of HTML5	K3
CO5	Acquire knowledge of HTML5 in effective webdesigning	K3

Mapping with Programme Outcomes

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

S- Strong ; M – Medium ; L- Low

17UCS3SA	SKILL BASED COURSE I: BASICS OF WEB DESIGNING	SEMESTER - III

Total Credits: 4
Hours Per week: 4

CONTENTS

UNIT - I Introduction to HTML

Introduction-History-Editors-Basics-Elements-Attributes- Headings-
Paragraphs-Styles and Formatting-Quotations and Comments-Images-
Tables-Lists-Blocks-Frames-HTML Forms

UNIT - II Introduction to Java Script

Introduction to JavaScript-Variables, Operators and Data Types-
Functions-Events-Strings

UNIT – III More on Java Script

Java Script statements- if, else if…else, switch statements. Looping-for,
for/in, while, do while.

UNIT-IV Introduction to HTML 5

Introduction to HTML 5 - New Elements- Semantics-HTML Canvas.

UNIT-V Advanced HTML5

HTML5 SVG-HTML Video-HTML Audio-HTML YouTube.

TEXT BOOKS:

1. Laura Lemay , Rafe Colburn , Jennifer Kyrnin **"Mastering HTML,
   CSS & Javascript Web Publishing Paperback – 15 July 2016".** BPB
   Publications.

Web References:

1. https://www.w3schools.com

REFERENCE BOOKS:

1. Firuza Yezdi Aibara, **"HTML 5 for Beginners "** Arizona Business
   Alliance LLC, 2012.

17UCS3SP	SKILL BASED PRACTICAL I: BASICS OF WEB DESIGNING LAB	SEMESTER - III

Total Credits: 2
Hours Per week: 4

PREAMBLE:

- Understand the importance of the web as a medium of communication.

- Understand the principles of creating an effective web page, including an in-depth consideration of information architecture.

- Become familiar with graphic design principles that relate to web design and learn how to implement these theories into practice.

- Develop skills in analyzing the usability of a web site.

- Learn the language of the web: HTML and CSS.

CONTENTS

1. Write a HTML code to design a table.
2. Write a HTML code to implement forms in HTML
3. Write a Java Script program to implement operators and functions.
4. Write a Java Script program to implement various events.
5. Write a Java Script program to implement the different types of statements.
6. Write a Java Script program to implement looping.
7. Write a HTML code to implement new elements of HTML5.
8. Write a HTML code to implement HTML5 Canvas.
9. Write a HTML code to embed an audio file in HTML document.
10. Write a HTML code to embed a video file in HTML document

17UCS43A	CORE-VI: SYSTEM SOFTWARE AND OPERATING SYSTEM	SEMESTER - IV

PREAMBLE:

- To instill the concepts of the functionalities of various system software

- To inculcate the common functionality of operating system

Course Outcome

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

CO Number	CO Statements	Knowledge Level
CO1	To learn basic concepts of system software.	K1
CO2	To identify the fundamentals of operating system	K1
CO3	Explain the concepts of Scheduling and dead lock process.	K2
CO4	Demonstrate the concepts of process synchronization and Inter process communication	K3
CO5	Explain about memory management and file system	K2

Mapping with Programme Outcomes

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

(S-Strong, M-Medium, L-Low)

17UCS43A	CORE-VI: SYSTEM SOFTWARE AND OPERATING SYSTEM	SEMESTER - IV

Total Credits: 5
Hours Per week: 5

CONTENTS

UNIT - I

Assembler: Elements of assembly Language programming-A simple assembly scheme-Pass structure of assemblers-Design of Two Pass assembler. Macros and macro processor: Macro Definition and call-Micro Expansions-Nested macro calls.Compilers and Interpreters: Aspects of compilation-Memory allocation-Compilation of expressions – Compilation of control structures-Code optimization-Interpreters.

UNIT - II

Evolution of OS Functions: OS Functions-Evolution of OS functions-Batch processing systems-Multiprogramming systems-Time sharing systems-Real time operating systems-OS structure. Processes: Process definition – Process Control- Interacting Processes-Implementation of Interacting Processes-Threads.

UNIT - III

Scheduling: Scheduling policies-Job scheduling-Process Scheduling -Process management in unix-Scheduling in multiprocessor OS. Deadlocks: Definition-Resource status modeling-Handling deadlocks-Deadlock detection and resolution-deadlock Avoidance-Mixed approach to deadlock handling.

UNIT - IV

Process Synchronization: Implementing control synchronization-Critical sections-Classical process synchronization problems-Evolution of Language features for process synchronization-Semaphores-Critical regions-Conditional critical regions-Monitors. Inter-process Communication: Inter-process messages-Implementation issues-Mailboxes.

UNIT - V

Memory Management: Memory allocation preliminaries-Contiguous memory allocation-Non contiguous memory allocation-Virtual memory using paging-Virtual memory using segmentation. File Systems: Directory Structures-File production-Allocation of Disk space-Implementing file access-File sharing-File system reliability- Unix File System.

TEXT BOOK:

1. D M Dhamdhere.2011.2nd Revised Edition,"Systems Programming And Operating Systems", Tata McGraw-Hill Publishing.

REFERENCE BOOKS:

1. Leland L. Beck. Third Edition. 2003. System Software-An Introduction to Systems Programming, Pearson Education Publishers.

2. H.M. Deitel. Second Edition. 2003. Operating Systems, Pearson Education Publication.

3. Achyut S. Godbole. 2002. Operating Systems, Tata McGraw Hill Publications.

17UCS43B	CORE-VII: RELATIONAL DATABASE MANAGEMENT SYSTEM	SEMESTER - IV

PREAMBLE:

- To Understand functional components of the DBMS and the normalization forms in building an effective database tables

- To formulate queries using Relational Algebra, Relational Calculus and SQL.

- To Develop application programs using PL/SQL

- Acquire an introductory level of skill in the use of selected microcomputer database-management systems.

Course Outcome

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

CO Number	CO Statements	Knowledge Level
CO1	Understand the basic concepts of database	K2
CO2	Demonstrate the use of SQL for database creation	K2
CO3	Construct SQL queries for data aggregation, calculations, Sub-queries, embedded queries, manipulation, and report generation.	K3
CO4	Explain the basics of PL/SQL	K2
CO5	Construct PL/SQL triggers, Functions, Procedures and packages for ensuring data integrity and security.	K3

Mapping with Programme Outcomes

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

17UCS43B	CORE-VII: RELATIONAL DATABASE MANAGEMENT SYSTEM	SEMESTER - IV

Total Credits: 5
Hours Per week: 5

CONTENTS

UNIT - I

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De -normalization – Another Example of Normalization.

UNIT - II

Oracle9*i: O*racle9i an introduction – SQL.Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT - III

Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

UNIT - IV

PL/SQL: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Exceptions – Types of Exceptions.

UNIT - V

PL/SQL Composite Data Types: Records – Tables – arrays. Named Blocks: Procedures – Functions – Packages –Triggers.

TEXT BOOK:

1.Nilesh Shah(2011). 2nd edition .Database Systems Using ORACLE, PHI.

REFERENCE BOOKS:

1. Arun Majumdar & Pritimoy Bhattacharya. Database Management Systems, 2007, TMH.

2. Kevin Loney, George Koch, and the Experts at TUSC. (2002 Copy Right) Oracle 9i: The Complete Reference, TMH

17UCS43P	CORE PRACTICAL - V: RELATIONAL DATA BASE MANAGEMENT SYSTEM	SEMESTER - IV

Total Credits: 2
Hours Per week: 4

OBJECTIVES:

1. To inculcate Knowledge in Relational Database Concepts.

2. To understand transaction management concepts in database system.

3. To instill facts about PL/SQL programs.

CONTENTS

1. Create a table for Employee details with Employee Number as primary key and following fields: Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least ten rows and perform various queries using any one Comparison, Logical, Set, Sorting and Grouping operators.

2. Create tables for library management system which demonstrate the use of primary key and foreign key. Master table should have the following fields: Accno, Title, Author and Rate. Transaction table should have the following fields: User id, Accno, Date of Issue and Date of Return. Create a Report (Select verb) with fields Accno, Title, Date of Issue for the given Date of Return with column formats.

3. Write a PL/SQL to update the rate field by 20% more than the current rate in inventory table which has the following fields: Prono, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block.

4. Write a PL/SQL to split the student table into two tables based on result (One table for "Pass" and another for "Fail"). Use cursor for handling records of student table. Assume necessary fields and create a student details table.

5. Create a database trigger to implement on master and transaction tables which are based on inventory management system for checking data validity. Assume the necessary fields for both tables.

6. Write a PL/SQL to raise the following Exception in Bank Account Management table when deposit amount is zero.

7. Create the following table *(PK - Primary Key, FK – Foreign Key)* cat_head, route_head, place_head, route_detail, ticket_detail, ticket_head with the mapping given below:
cat_head route_head *(cat_code PK) (cat_code FK)* route_head route_detail *(route_id PK) (route_id FK)* ticket head ticket detail *(tick_no PK) (tick_no FK)* place_head route_detail *(place_id PK) (place_id FK)*
 (i) Alter the table ticket header to add a check constraint on ticket_no to accept values between 1 and 500
 (ii) Alter table route header to add a column with data type as long. Data Manipulation Basics

8. (a) Insert values to above tables
(b) Display only those routes that originate in madras and terminate at cochin

(c) Display only distinct category code from the table route_header in descending manner.

 (d) Update the table route_header to set the distance between madras and coimbatore as 500

9. a. Write a PL/SQL block to update the bus_station to be ―ERODE where place_id is '01' or ‗05' [place_header]

b. Write a PL/SQL block to satisfy the following condition by accepting the route_id as user input. If the distance is less than 500 than update the fare to be 200

c. Write a Database trigter before insert for each row on the table route_detail not allowing transaction on Saturday / Sunday

 d. Write a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table route_details

10. Develop a Simple Project for Student Database Management System.

17UCS4AA	ALLIED IV:CYBER SECURITY	SEMESTER - IV

PREAMBLE :

- This course is offered in the fourth semester of B.Sc Computer Science, on successful completion the students will earn Four Credits.

- This course aims at making the student familiar with the Information Security and Assurance.

- This course helps to get an exposure to the spectrum of security activities, methods, methodologies, and procedures

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the key concepts of hardware and software security	K1
CO2	Demonstrate various encryption algorithms	K2
CO3	Relate the different areas of program security	K3
CO4	Usage of security in operating systems	K3
CO5	Apply the concepts of database security	K3

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	M	S
CO2	S	M	M	S	M
CO3	S	S	M	M	M
CO4	M	M	S	M	M

| CO5 | S | S | M | S | M |

S- Strong; M – Medium; L- Low

| 17UCS4AA | ALLIED IV:CYBER SECURITY | SEMESTER - IV |

Total Credits:4

Hours Per week: 4

CONTENTS

UNIT – I

Is there security problem in Computing? What does security mean? – Attacks- The meaning of Computer security-Computer Criminals- Methods of Defense- Hardware and software security

UNIT – II

Elementary Cryptography: Terminology & background- Substitution Ciphers-Transpositions- Making good Encryption Algorithms- DES-AES-Public Key Encryption-Uses of Encryption.

UNIT – III

Program Security: Secure Programs- Non malicious Programs Errors- Viruses & other Malicious code- Targeted Malicious code- Controls against Program Threats.

UNIT – IV

Operating System: Protected objects & methods of Protections- Memory and Address protection - User Authentication. Designing trusted Operation operating system: What is trusted system?- Security policies- Models of security- Trusted OS design.

UNIT – V

Database Security: Introduction to Database, Security Requirements- Reliability & Integrity- Sensitive data- Inference- Multilevel Database-Proposal for Multilevel Security.

TEXT BOOKS:

1. Jonathan Rosenoer, "Cyber Law-The Law of Internet", Springer. 2nd edition,1996.

2. Charles P. Pfleeger and Shari L. Pfleeger."Security in Computing" Prentice-Hall. 3rd Edition.

REFERENCE BOOK:

1. Dieter Gollmann "Computer Security". John Wiley & Sons, 2nd Edition.

17UCS4SA	SKILL BASED COURSE – II: MULTIMEDIA AND ANIMATION	SEMESTER - IV

PREAMBLE:

- Introducing the concepts of multimedia and its applications.
- Understanding various file formats.
- Learning about various techniques in the area of animation.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of Multimedia and its working environment	K1
CO2	Understand the concepts of Image processing	K2
CO3	Understanding Audio and Multimedia	K3
CO4	Learn the Video concepts and file formats.	K2
CO5	Illustrate the concepts of Animation	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS4SA	SKILL BASED COURSE – II: MULTIMEDIA AND ANIMATION	SEMESTER - IV

Total Credits: 4
Hours Per week: 4

CONTENTS

UNIT - I

Multimedia-An Overview: Introduction -Multimedia Presentation and Production-Characteristics of a Multimedia Presentation-Hardware and Software Requirements -Uses of Multimedia Analog and Digital Representations -Digitization -Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats.

UNIT - II

Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT - III

Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response - Audio Processing Software.

UNIT - IV

Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – PC Video – Video File Formats and CODECs – Video Editing – Video Editing Software.

UNIT - V

Animation: Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. Compression: MPEG-1 Audio – MPEG-1 Video - MPEG-2Audio – MPEG-2 Video.

TEXTBOOK:

1. PRINCIPLES OF MULTIMEDIA – Ranjan Parekh, 2007, TMH.

REFERENCE BOOK:

1. MULTIMEDIA: Making it Work – Tay Vaughan, 7th edition,

17UCS4SP	SKILL BASED PRACTICAL – II: MULTIMEDIA AND ANIMATION	SEMESTER - IV

Total Credits: 2
Hours Per week: 4

PREAMBLE:

- To put on knowledge on the basic concepts of Photoshop

- To expand information on the concepts of Animation

CONTENTS

1. Create Sun Flower using Photoshop.

2. Animate Plane Flying in the Clouds using Photoshop.

3. Create Plastic Surgery for the Nose using Photoshop.

4. Create See-through text using Photoshop.

5. Create a Web Page using Photoshop.

6. Convert Black and White Photo to Color Photo using Photoshop.

7. Design a Visiting Card containing at least One Graphic and Text Information using Photoshop.

8. Take a photographic image. Give a title for the Image. Put the border. Write your names. Write the name of the institution and place using Photoshop.

9. Prepare a cover page for the book in your Subject area. Plan your own design using Photoshop.

10. Adjust the brightness and contrast of a Picture so that it gives an elegant look using Photoshop.

17UCS53A	CORE-VIII: DATA COMMMUNICATION AND NETWORKS	SEMESTER - V

PREAMBLE:

- This course aims at making the students familiar with the concepts of data communication and transmission
- Understanding about various layers in network models
- Learning about various algorithms in data communication.

Course Outcome

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

CO No.	CO. Statement	Knowledge Level
1	Know about data communications and transmission methods	K2
2	Describe modes of data transmission, transmission media and network topologies	K3
3	Memorize OSI layers, routing algorithms and ISDN architecture	K2
4	Know about internetworking devices and problems in internetworking	K2
5	Remember TCP and UDP communication and classify various application level protocols	K1

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS53A	CORE-VIII: DATA COMMMUNICATION AND NETWORKS	SEMESTER - V

Total Credits: 5
Hours Per week: 5

CONTENTS

UNIT - I

Introduction to Data Communications and Networking – Information Encoding – Analog and Digital Transmission Methods.

UNIT - II

Modes of Data Transmission and Multiplexing -**Transmission Errors**: Introduction –Error Classification -Types of error- Error Detection and Correction.

Transmission Media: Guided Media, Unguided Media – **Network Topologies:** Mesh, Star, Tree, Ring, Bus – Switching: Circuit switching, Message switching, Packet switching.

UNIT - III

Routing Algorithms: Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms-Network Protocols and OSI Model-Integrated Services Digital Network (ISDN).

UNIT - IV

Internetworking Concepts: Introduction – The Problems in Internetworking - Internetworking Devices- Introduction to TCP / IP, IP, ARP, RARP, ICMP

UNIT - V

TCP: Features of TCP, Relationship between TCP and IP, Ports and Sockets, TCP connections, What makes TCP Reliable, TCP Packet Format – **User Datagram Protocol (UDP):** UDP Packet, Difference between UDP and TCP – Domain Name System (DNS) – Electronic Mail (Email) – File Transfer Protocol (FTP) .

TEXT BOOK:

1. Achyut S.Godbole. 2007 . DATA COMMUNICATIONS AND NETWORKS, Tata McGraw Hill Publications.

REFERENCE BOOK:

1. Behrouz A. Forouzan. 19th reprint, 2007. DATA COMMUNICATIONS AND NETWORKING – SECOND EDITION UPDATE, Tata McGraw-Hill Publication.
2. Andrew S. Tanenbaum. 3rd Edition, 2000. COMPUTER NETWORKS, Prentice Hall of India.

17UCS53B	CORE IX: DOTNET PROGRAMMING	SEMESTER – V

PREAMBLE:

- Understand to design and guide the development of Dot Net Architecture.
- It enables an unprecedented level of software Integration.
- To provide a consistent object- oriented Programming Environment.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO 1	Understanding the building of standalone Applications.	K1
CO 2	Apply the design principles in distributed data-driven Applications	K2
CO 3	Able to create design in web-based distributed applications using C#, ASP.NET	K3
CO 4	Understand XML parser in .NET and create web Service-based components.	K3
CO 5	Solve the problems in real time using C# Applications	K4

Mapping with Programme Outcomes

COS/POS	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	S	S	M	L
CO 2	M	M	S	L	L
CO 3	M	M	S	S	S
CO 4	S	M	S	M	S
CO 5	M	M	S	S	S

S- Strong; M-Medium; L-Low

17UCS53B	CORE IX: DOTNET PROGRAMMING	SEMESTER - V

Total Credits: 5
Hours Per week: 5

CONTENTS

UNIT - I

Getting set up: ASP.NET? Session up, environment, overview. Programming basics: basics, program flow, coding techniques, designing applications, ASP.NET configuration, scope, Introduction about Application and Session object.

UNIT - II

Validation controls – Data list web server controls – Programming Asp.NET with VB.NET – Web forms and ASP.NET.

UNIT - III

ASP.NET objects and components: scripting object model, components and controls, project example, more active components. Web services and ASP.NET: web service development, WSDL and SOAP, web services background. ASP.NET and SQL server: using SQL server, using databases in ASP.NET.

UNIT - IV

C# Framework – overview of c#: simple program, namespaces, main returning value, passing string objects, command line arguments, mathematical functions, compile time errors, structure. Literals, Variables and data types. Operators and Expressions.

UNIT - V

Decision Making and branching, Decision Making and looping, handling arrays. Button control, textbox, combo box, Tree view control, Menu editor ,Constructors and Member functions, Exception handling.

TEXT BOOKS:

1. ASP.NET – A Beginner's Guide, Dave Mercer, Third Edition, TATA McGraw Hill Education India Private Limited.

2. ASP.NET Developer's Guide, Greg Buczek, Tata McGraw Hill Edition.

3. Programming in c# - A Primer, E. Balagurusamy, Third Edition, TATA McGraw Hill Education India Private Limited.

REFERENCE BOOK:

1. A Brain – Friendly Guide Head First C #, Andrew Stellaman & Jennifer Greene.O'REILLY.

17UCS53C	CORE X: PYTHON PROGRAMMING	SEMESTER - V

PREAMBLE:

- Understanding the design and development of applications in Python.
- Enabling high level of software engineering in the Python environment.
- Providing a consistent object- oriented programming skill.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO 1	Understanding the development of individual applications.	K1
CO 2	Applying the design principles in the data-driven applications	K2
CO 3	Enabling to design the web-based applications using Python	K3
CO 4	Understanding the machine learning ability of Python based components.	K3
CO 5	Solving the real time problems using Python	K4

Mapping with Programme Outcomes

COS/POS	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	M	S	M	L
CO 2	M	S	S	M	M
CO 3	M	M	S	S	L
CO 4	S	S	S	M	S
CO 5	M	L	S	S	S

S- Strong; M-Medium; L-Low

17UCS53C	CORE X: PYTHON PROGRAMMING	SEMESTER - V

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT - I INTRODUCTION TO PYTHON

Introduction – Python overview – Getting started – Comments – Python identifiers – Reserved keywords – Variables – Standard data types – Operators – Statements and Expressions – String operations – Boolean expressions.

UNIT - II CONTROL STATEMENTS & FUNCTIONS

Control Statements: The for loop – While statement – if elif else statement – Input from keyboard

Functions: Introduction – Built-in functions – Type conversion – Type coercion – Date and time – dir() function – help() function – User defined functions – Parameters & arguments – Function calls – The return statement – Python recursive function .

UNIT - III STRINGS & LISTS

Strings – Compound data type – len function – String slices – String traversal – Escape characters – String formatting operator – String formatting functions .

Lists – Values and accessing elements – Traversing a list – Deleting elements from list – Built-in list operators – Built-in list methods.

UNIT – IV TUPLES AND DICTIONARIES

Tuples – Creating tuples – Accessing values in tuples – Tuple assignment – Tuples as return values – Basic tuple operations – Built-in tuple functions

Dictionaries – Creating a dictionary – Accessing values in a dictionary – Updating dictionary – Deleting elements from dictionary – Operations in dictionary – Built-in dictionary methods

UNIT - V CLASSES & OBJECTS

Overview of OOP – Data encapsulation – Polymorphism – Class definition – Creating objects – Inheritance – Multiple inheritances – Method overriding – Data encapsulation – Data hiding.

TEXT BOOK:

1. Introduction to computing and problem solving using python by E Balagurusamy , McGrawHill publication,2016.

REFERENCE BOOK:

1. Core python programming by Wesley J.Chun , third edition, PHI.

17UCS53P	**CORE PRACTICAL VI: PROGRAMMING IN DOTNET**	**SEMESTER - V**

Total Credits: 2
Hours Per week: 5

PREAMBLE:

- To enable the students to acquire basic knowledge in Dot net Programming.

- The .net framework is one of the tools provided by the .net platform.

- It provides an Environment for building, deploying and running web services and other applications like Console applications; Windows based applications, Web sites.

CONTENTS

1. Write a simple program to display current date and time using delegates and events.
2. Implement a program using Auto post back property.
3. Design a calendar
4. Demonstrate a program using SQL connectivity.
5. Create a C#. Net program to add a string to combo box with value of textbox when user clicks the control.
6. Implement a program using tree view control.
7. Demonstrate a program using constructors and Member functions.
8. Create an application in C# .Net to demonstrate any 4 events.
9. Create an application in c# .Net for File menu and Edit menu.
10. Design a simple calculator.
11. Validate sample information using validation controls.
12. Design a notepad application using menu editor.

17UCS53Q	CORE PRACTICAL-VII: PYTHON PROGRAMMING LAB	SEMESTER - V

Total Credits: 2
Hours Per week: 5

CONTENTS

1) Write a program to swap the values of two variables.

2) Write a program to implement different categories of operators in python programming.

3) Write a program to demonstrate while loop and for loop.

4) Write a program to print the prime numbers for a user provided range using if else.

5) Write a function to find the sum of natural numbers using recursion.

6) Write a program to print the current date and time.

7) Write a program to print current directory.

8) Write a program to implement recursion for factorial of a number that demonstrates the user defined function and return statement.

9) Write a program to check whether a string is palindrome or not.

10) Write a python program to demonstrate various string functions and operations.

11) Write a python program to demonstrate list functions and operations.

12) Write a python program to demonstrate tuples functions and operations.

13) Write a python program to demonstrate dictionary functions and operations.

14) Write a program that defines a class named rectangle that takes the parameters length and breadth. The class rectangle should also contain a method for computing its perimeter.

15) Write a program that defines a class named employee. Define two subclasses : Engineer and Manager . Every class should have a method named printDesignation() that prints Engineer for Engineer class and Manager for Manager class.

17UCS63A	CORE XI: PHP & MySQL	SEMESTER - VI

PREAMBLE:

- To learn the necessary knowledge to design and develop dynamic, data-driven & interactive web pages using PHP.

- To develop the PHP framework and syntax, most important techniques used to build dynamic web sites and perform hands on practice with a MySQL database to create database-driven HTML forms.

- To learn and develop various PHP technology applications that definitely meets the current industry needs.

- To understand the process of designing and implementing Web applications, using PHP

Course Outcome

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

CO Number	CO Statements	Knowledge Level
CO1	To Understand the Preliminaries of PHP	K1
CO2	To acquire the knowledge of core logic and Techniques	K1
CO3	Apply the knowledge of arrays functions	K2
CO4	Build Web Applications using functions & classes , and that manipulate files and directories.	K3
CO5	Develop database connectivity using MySQL and solve various database tasks using the PHP language	K3

Mapping with Programme Outcomes

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

S: Strong   **M:** Medium   **L:** Low

17UCS63A	CORE XI: PHP & MySQL	SEMESTER - VI

Total Credits: 5
Hours Per week: 6

CONTENTS

UNIT – I

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

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

UNIT – III

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

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.

UNIT – V

Working with Database and SQL : Introducing Database and SQL- Using MySQL-Adding and modifying Data-Handling Errors – Using SQLite Extension and PDO Extension. Introduction XML—Simple XML and DOM Extension.

TEXT BOOK :

PHP A Beginner's Guide —, VIKRAM VASWANI, Tata McGraw-Hill

REFERENCE BOOK:

1. The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition.

 2. Spring into PHP5 – Steven Holzer, Tata McCraw Hill Edition

17UCS63B	CORE XII: FUNDAMENTALS OF CLOUD COMPUTING	SEMESTER – VI

PREAMBLE:

• Introducing the basic concepts of cloud computing and services.

• Understanding the Cloud computing architectures, applications and challenges

• Learning about various cloud storages and explore sharing.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of cloud and its working environment	K1
CO2	Understand the projects and collaboration of cloud	K2
CO3	Understanding cloud services	K3
CO4	Learn the outside concepts of cloud.	K2
CO5	Illustrate the concepts of storage and sharing with communities	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS63B	CORE XII: FUNDAMENTALS OF CLOUD COMPUTING	SEMESTER – VI

Total Credits: 4
Hours per Week: 5

CONTENTS

UNIT - I

INTRODUCTION: Cloud Computing Introduction, From, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.

UNIT - II

CLOUD COMPUTING FOR EVERYONE: Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedules managing projects, presenting on road.

UNIT - III

USING CLOUD SERVICES: Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

UNIT - IV

OUTSIDE THE CLOUD : Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis.

UNIT - V

STORING AND SHARING: Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, exploring on line photo editing applications, exploring photo sharing communities, controlling it with web based desktops.

TEXT BOOKS:

1. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009

2. Anthony T. Velte,Cloud Computing A Practical Approach 1st Edition, Tata Mcgraw Hill *Education Private Limited (2009)*

REFERENCE BOOKS:

1. Cloud Computing: A Hands-On Approach Paperback – Import, 9 Dec 2013 by Arshdeep Bahga

17UCS63P	CORE PRACTICAL VIII: PHP & MySQL	SEMESTER - VI

Total Credits: 2
Hours Per week: 5

PREAMBLE:

- Understand the basics of the Web Technology
- Learn all major concepts of PHP and MySQL that beginner developers need master to gain the PHP programming skills needed to successfully build interactive, data-driven sites.

CONTENTS

1. Write a program to send an HTML formatted Email in PHP.

2. Write a program to do different types of Sorting in PHP.

3. Write a program to do String Manipulation in PHP.

4. Write a PHP program to get color code from the user which displays the color name.

5. Write a PHP program to do calculator functions

6. Write a program to upload a file in PHP.

7. Write a program for login authentication using PHP and MySQL

8. Create a Pay slip for an employee using PHP and MySQL

9. Create a Electricity bill using PHP and MYSQL, and generate the reports

10. Create a student data base with DML QUERIES.

11. Write a program to demonstrate how a web page can communicate with a web server while a user type characters in an input field

12. Download a small project module and convert into our Requirement Example website

     1. www.phpclasses.com

     2. www.codeguru.com

ELECTIVE – I

17UCS5EA	ELECTIVE I :E-LEARNING	SEMESTER - V

PREAMBLE:

- E-Learning can accommodate different learning styles and facilitate learning through a variety of activities
- Develops knowledge of the Internet and computers skills that will help learners throughout their lives and careers.
- To learn development of E-Learning Contents.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of E-Learning and the concept of online education	K1
CO2	Apply the tools for E-Learning	K2
CO3	Applying animation effects for enhanced presentation	K2
CO4	Learn how to add audio to animations	K2
CO5	Illustrate the concepts of adding special effects to video	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS5EA	ELECTIVE I :E-LEARNING	SEMESTER - V

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT - I

E-Learning Evolution - Advantages and Disadvantages of E-Learning - Instructional design Models for E-Learning -Applying User-Centered Design to E-Learning - Methods and Measures to Retain Students Enrolled in Online Education -Choosing an Effective Communication Tool.

UNIT - II

Flash: Geometric shape tools – Drawing tools- fill and stroke controls-Selection Tools.

UNIT - III

Creating Animation and Effects: Animation strategies – TimeLine Animation – Character animation Techniques – fundamentals of Editing.

UNIT - IV

Sound: Import and Export formats – Importing sound to flash – adding sound to timeline – synchronizing audio to animations- stopping sounds – Working with sound forge.

UNIT - V

Video: Integrating and Importing Video – Editing video with Adobe Premiere – Organizing & Editing clips – Adding Transition between clips – Adding special effects to video.

TEXT BOOKS:

1. Robert Reinhardt and Snow Dowd, Macromedia flash 8 Bible, First Edition, Wiley India (P) Ltd, 2006.

2. Pamela Berman, E-Learning Concepts and Techniques, Institute for Interactive Technologies, Bloomsburg University of Pennsylvania, USA (e-book), 2006.

REFERENCE BOOKS:

1. Dinesh Maidasani , Flash 8, First Edition, Firewall Media Publications, 2006.

2.Fred T.Hofstetter, MultiMedia Literacy, Tata McGraw Hill, 2001.

17UCS5EB	ELECTIVE I: COMPUTER NETWORKS	SEMESTER – V

PREAMBLE:

- To inculcate knowledge on networking concepts and technologies like wireless, broadband and Bluetooth.
- Understand state-of-the-art in network protocols, architectures, and applications.
- Exposure to the TCP/IP protocol suite.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of networks and its working models	K1
CO2	Understand the transmission medium and communication satellites	K2
CO3	Understand the concept of protocols	K3
CO4	Learn the concepts of routing and congestion control algorithms	K2
CO5	Illustrate the algorithms for security and cryptography	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS5EB	ELECTIVE I: COMPUTER NETWORKS	SEMESTER – V

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT - I

Network Hardware: LAN – WAN – MAN – Wireless – Home Networks. Network Software: Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. Reference Models: OSI Reference Model – TCP/IP reference Model – Comparison of OSI and TCP/IP -Critique of OSI and protocols – Critique of the TCP/IP Reference model.

UNIT - II

PHYSICAL LAYER - Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. Wireless Transmission: Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. Communication Satellites: Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.

UNIT - III

DATA-LINK LAYER: Error Detection and correction – Elementary Data-link Protocols – Sliding Window Protocols. MEDIUM-ACCESS CONTROL SUB LAYER: Multiple Access Protocols – Ethernet – Wireless LANs - Broadband Wireless – Bluetooth.

UNIT - IV

NETWORK LAYER: Routing algorithms – Congestion Control Algorithms. TRANSPORT LAYER: Elements of Transport Protocols – Internet Transport Protocols: TCP.

UNIT - V

APPLICATION LAYER: DNS – E-mail. NETWORK SECURITY: Cryptography– Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures.

TEXTBOOKS:

1.Andrew S. Tanenbaum, COMPUTER NETWORKS, Pearson Education, Fourth Impression,2010.

REFERENCE BOOKS:

1.Achyut Godbole , DATA COMMUNICATION AND NETWORKS , Tata MaGraw-Hill, Seventh Reprint 2007..
2.Uyless Black, COMPUTER NETWORKS - Protocols, Standards, and Interfaces , Prentice-Hall International, 1993.

17UCS5EC	ELECTIVE I : UNIFIED MODELING LANGUAGE	SEMESTER - V

Total Credits: 4
Hours Per week:5

PREAMBLE:
- Introducing students to the concepts and terms used in the object-oriented approach to systems analysis and design
- Highlighting the importance of object-oriented analysis and design and its limitations.
- Showing how to apply the process of object-oriented analysis and design to software development.

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of UML	K1
CO2	Understand the advanced modeling of classes	K2
CO3	Understanding class diagrams	K3
CO4	Building state machines and state chart diagrams.	K2
CO5	Deployment of models	K2

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS5EC	ELECTIVE I : UNIFIED MODELING LANGUAGE	SEMESTER - V

Total Credits: 4
Hours Per week:5

CONTENTS

UNIT - I

UML : Introduction to UML – Basic Structural Modeling: Classes – Relationships-Common Mechanism – Diagrams – Class diagrams.

UNIT - II

Advanced Structural Modeling: Advance classes – Advance relationships – Interfaces - Types and Roles – Packages - Instances – Object diagrams.

UNIT - III

Basic Behavioral Modeling – Interactions – Use Cases –Use Case diagrams- Interaction Diagrams – Activity diagram.

UNIT - IV

Advanced Behavioral Modeling: Events and Signal – State machines – Process and Threads – Time and Space – State chart diagrams.

UNIT - V

Architectural Modeling – Components –Deployment –Collaborations.

TEXT BOOK:

1. *Grady Booch, James Rumbaugh and Ivar Jacobson,* **"The Unified Modeling Language User Guide"**, Second Edition, Pearson Education, Fourth Impression, 2008.

2.

ELECTIVE – II

17UCS6EA	ELECTIVE – II : NETWORK SECURITY AND CRYPTOGRAPHY	SEMESTER - VI

PREAMBLE:

- Extensive, detailed and critical understanding of the concepts, issues, principles and theories of computer network security.

- Detailed and practical understanding of formalisms for specifying security related properties and validating them, using model checking.

- Critical theoretical and detailed practical knowledge of a range of computer network security technologies as well as network security tools and services.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of security	K1
CO2	Understand the algorithms of security	K2
CO3	Understanding message authentication and digital signature	K3
CO4	Building secure socket layers for electronic transactions	K2
CO5	Deployment of firewall principles	K2

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS6EA	ELECTIVE – II : NETWORK SECURITY AND CRYPTOGRAPHY	SEMESTER - VI

Total Credits: 4
Hours Per week:5

CONTENTS

UNIT - I

Service mechanism and attacks – The OSI security architecture – A model for network security – symmetric Cipher model – Substitution techniques – transposition techniques – simplified des – block cipher principles – the strength of des – block cipher design principles and modes of operation.

UNIT - II

Triple des-blow fish – RCS Advanced Symmetric Block Ciphers –RC4 stream Cipher confidentially using symmetric encryption – introduction to number theory – public – key cryptography and RSA.

UNIT - III

Key management – Diffle Hellman key exchange – message authentication and hash function – hash algorithm – digital signature and authentication protocols – digital signature standard.

UNIT - IV

Authentication application – pretty good privacy – S/MIME – ip security – web security considerations –secure socket layer transport layer security –secure electronic transaction.

UNIT - V

Intruders –intrusion detection – password management –viruses and related threats – virus countermeasures – fire wall design principles – trusted systems

TEXT BOOK:

1. William Stallings,Cryptography and Network Security Principles and Practices, Fourth edition, Pearson Education Limited.

REFERENCE BOOKS:

1. Atul kahate —Cryptography and Network Security, Third Edition, McGraw Hill Education(India) Private Limited.

2. Behrouz A Forouzan and Debdeep Mukhopadhyay, Cryptography and Network Security,Second Edition, Tata MaGraw-Hill.

17UCS6EB	ELECTIVE – II : ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM	SEMESTER-VI

PREAMBLE:

- Understand the strengths and limitations of various state-space search algorithms, and choose the appropriate algorithm for a problem.

- Formulate and solve problems in the framework of constraint programming.

- Represent domain knowledge in propositional and first-order logic. To have enriched knowledge regarding heuristic search, Knowledge representation and Expert systems.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the techniques of AI	K1
CO2	Understand the various search techniques.	K2
CO3	Representing knowledge for a problem	K3
CO4	Understanding the logic behind problems	K2
CO5	Knowledge on expert systems	K2

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS6EB	ELECTIVE – II : ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM	SEMESTER-VI

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT - I

Introduction: AI Problems – AI techniques – Criteria for success. Problems, Problem Spaces, Search: State space search – Production Systems – Problem Characteristics – Issues in design of Search.

UNIT - II

Heuristic Search techniques: Generate and Test – Hill Climbing – Best-Fist, Problem Reduction, Constraint Satisfaction, Means-end analysis.

UNIT - III

Knowledge representation issues: Representations and mappings – Approaches to Knowledge representations – Issues in Knowledge representations – Frame Problem.

UNIT - IV

Using Predicate Logic: Representing simple facts in logic – Representing Instance and Isa relationships – Computable functions and predicates – Resolution – Natural deduction.

UNIT - V

Representing knowledge using rules: Procedural Vs Declarative knowledge – Logic programming – Forward Vs Backward reasoning – Matching – Control knowledge-Brief explanation of Expert Systems-Definition- Characteristics-architecture-Knowledge Engineering- Expert System Life Cycle-Knowledge Acquisition Strategies-Expert System Tools.

TEXT BOOK:

1. Elaine rich and Kelvin Knight, Artificial Intelligence, Tata McGraw-hill,Second Edition, 1991.

REFERENCE BOOKS:

1. Stuart Russell & Peter Norvig, Artificial Intelligence a modern Approach, Second Edition Pearson Education.

2. George F Luger Artificial Intelligence, Fourth Edition, Pearson Education, 2002.

3. V S Janaki Raman, K Sarukes and P Gopalakrishnan, Foundations of Artificial Intelligent and Expert Systems, MacMillan India limited.

17UCS6EC	ELECTIVE – II : MOBILE COMPUTING	SEMESTER - VI

PREAMBLE:

• Introducing the mobile communication fundamentals.

• Understanding the mobile service providers with their architecture.

• Learning about android application with IDE programming for the

mobile environment.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals mobile communication with current scenario	K1
CO2	Understand the telecommunication system	K2
CO3	Learn the concepts of android.	K1,K3
CO4	How to download and install SDK environment.	K2
CO5	Apply the concepts of android using eclipse	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS6EC	ELECTIVE – II : MOBILE COMPUTING	SEMESTER - VI

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT - I

Introduction - History of Wireless communication-Applications - Market for Mobile communications - Characteristics of Wireless Technologies - Cellular System infrastructure – A simplified reference model. Medium access control – Motivation for a specialized MAC-SDMAFDMA-TDMA-CDMA.

UNIT - II

Telecommunication systems – GSM - Mobile services - System architecture - Radio interface – Protocols - Localization and calling – Handover – Security - new data services – DECT – System architecture -. Satellite systems – Applications – Basics – GEO – LEO – MEO.

UNIT - III

Android: Introduction to Android-Eclipse -Downloading and installing Eclipse –Downloading and installing the JRE & Eclipse.

UNIT - IV

Downloading and installing the android SDK-Downloading and installing the android plugin for Eclipse-configuring the Android plug in for eclipse-Exploring the Android SDK- Contents in the Android SDK-Application Life Cycle

UNIT - V

Application: Hello World!-Creating Your First android Project in Eclipse-Examining the Android created files-Hello World!-Creating the Hello

World! Activity in the Windows CLI Editing the project files-Adding the JAVA_HOME Variable-Compiling and Installing the Application.

TEXT BOOKS:

1.   J. Schiller,Mobile Communications, Second Edition, Second Impression, Pearson Education Limited.

2. Jerome (J.F.) and DiMarzio, Android- A Programmer's Guide, First Edition,McGraw Hill,2008.

ELECTIVE – III

17UCS6ED	ELECTIVE – III : DATA MINING	SEMESTER - VI

PREAMBLE:
- Introducing the basic concepts and techniques of Data Mining.
- Developing skills of using recent data mining software for solving practical problems.
- Gaining experience of doing independent study and research.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals Data Mining with current scenario	K1
CO2	Understand the techniques of Data Mining	K2
CO3	Learn the concepts of Classification	K1,K3
CO4	Learn the concepts of Clustering Techniques	K2
CO5	Understand the Association Rule techniques	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS6ED	**ELECTIVE – III : DATA MINING**	**SEMESTER - VI**

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT – I

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

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

UNIT - III

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

UNIT - IV

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

UNIT - V

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, Pearson Education, 2003.

REFERENCE BOOK:

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

17UCS6EE	ELECTIVE – III : OPEN SOURCE SOFTWARE	SEMESTER - VI

PREAMBLE:

- Understand the Programming concepts and Frame work of Hetrogenous Architecture.

- It enables an unprecedented level of software Integration.

Course outcome

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

CO Number	CO Statement	Knowledge Level
CO 1	Understanding the development of heterogeneous applications.	K1
CO 2	Developing the design principles for smart applications.	K2
CO 3	Enabling to design the web-based applications using open source software.	K3
CO 4	Understanding the overall scenario of concepts of open source.	K3
CO 5	Solving the real time problems using variety of open source software tools.	K4

Mapping with Programme Outcomes

COS/POS	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	M	S	M	S
CO 2	M	S	M	M	M
CO 3	L	M	S	S	L
CO 4	M	S	M	M	S
CO 5	M	M	S	M	S

S- Strong; M-Medium; L-Low

17UCS6EE	ELECTIVE – III : OPEN SOURCE SOFTWARE	SEMESTER - VI

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

1. Discuss the issues and currents in open source and open source development

2. Describe the history and philosophy of an open source project

3. Choose between the various open source licenses understanding the implications for users, developers, and the software community in general

CONTENTS

UNIT - I

Introduction to open sources – Need of open sources – advantages of open sources – application of open sources. Open source operating systems: LINUX : Introduction – general overview –Kernel mode and user mode – process – advanced concepts –scheduling – personalities – cloning – signals – development with Linux.

UNIT - II

MySQL : Introduction – setting up account – starting, terminating and writing your own SQL programs-record selection Technology – working with strings – Date and Time – sorting Query results – generating summary –working with meta data –using sequences – MySQL and Web.

UNIT - III

PHP: : Introduction –programming in web environment –variables-constants – data types – operators – statements – functions – arrays – OOP – string manipulations and regular expression – file handling and data storage – PHP and SQL database – PHP and LDAP – PHP connectivity –

sending and receiving E-mails – debugging and error handling – security –templates.

UNIT - IV

Python: Platforms-Data types and operations-Main control structure-Functions-File I/O-OOP basics-Network programming-Basics of image processing-CGI scripting -Online resources & communities.

UNIT - V

Perl: Platforms-Data types and operations-Control structures-Subroutines-Regular expressions-CGI scripting-Online resources & communities.

TEXT BOOKS:

1. Remy Card, Eric and Frank Mevel, The Linux Kernel book, Wiley Publications, 2003.

2. Steve Suchring , MySQL Bible, Wiley Publications, 2002.

REFERENCE BOOKS:

1. Rasmus Lerdorf and Levin Tatroe , Programming PHP , O'Reilly, 2002.

2. Wesley J. Chun , Core Python Programming Prentice Hall, 2001.

3. Martin c. Brown , Perl : The Complete Reference, Second Edition, Tata McGraw-Hill, 2009

4. Vikram Vaswani ,MySQL:The Complete Reference, Second Edition, Tata McGraw-Hill 2009.

5. Steve Holzner, PHP : The Complete Reference, Second Edition, Tata McGraw-Hill, 2009.

17UCS6EF	ELECTIVE : III XML & WEB SERVICES	SEMESTER - VI

PREAMBLE:

- To get practiced with creating the schemas and XML Document.

- To acquire knowledge on creating web services to deploy the web applications.

CO Number	CO Statement	Knowledge Level
CO1	Understand Web Services and its Infrastructure	K1
CO2	Understand the use of web services in B2C and B2B applications.	K2
CO3	Ability to Design collaborating web services according to a specification	K2
CO4	Ability to implement design principles and application of SOAP and REST based web services.	K2
CO5	Extract to Apply Design web-based applications that consume such Web Services.	K3

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCS6EF	ELECTIVE – III : XML & WEB SERVICES	SEMESTER - VI

Total Credits: 4
Hours Per week: 5

CONTENTS

UNIT – I

Role of XML – XML and The Web – XML Language Basics – SOAP – Web Services– Revolutions of XML – Service Oriented Architecture (SOA).

UNIT – II

XML – Name Spaces – Structuring With Schemas and DTD – PresentationTechniques – Transformation – XML.

UNIT – III

Overview of SOAP – HTTP – XML-RPC – SOAP: Protocol – Message Structure –Intermediaries – Actors – Design Patterns And Faults – SOAP With Attachments.

UNIT – IV

Overview – Architecture – Key Technologies - UDDI – WSDL – ebXML – SOAP AndWeb Services In E-Com – Overview Of .NET And J2EE.

UNIT – V

Security Overview – Canonicalization – XML Security Framework – XML Encryption– XML Digital Signature – XKMS Structure – Guidelines For Signing XML Documents – XML In Practice.

TEXT BOOK:

1.   Frank. P. Coyle, XML, Web Services and The Data Revolution, Pearson Education, 2002.

REFERENCE BOOKS:

1.   Ramesh Nagappan, Robert Skoczylas and Rima Patel Sriganesh, "Developing Java Web Services", Wiley Publishing Inc., 2004.

2.   Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2004.

3.   McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers, 2005.

NON MAJOR ELECTIVE COURSES

17UNM34	PART IV: NMEC - I OFFICE AUTOMATION LAB	SEMESTER - III

Total Credits: 2
Hours per Week: 2

PREAMBLE:

- To learn basic computer skills with Microsoft Word, Microsoft Excel, Microsoft PowerPoint and Microsoft Access.
- To learn internet skills for searching.
- To learn ICT based skill development.

CONTENTS

1. To create an email-id, compose and send a mail.
2. To send a mail with an attachment and download the attached document of a mail received.
3. To send a mail to a large number of recipients using cc and bcc options.
4. To search a content using a search engine.
5. To open and read newspaper sites.
6. Create a resume and format using MS WORD.
7. Create a class time table using MS WORD
8. Prepare mail merge for parent meeting using MS WORD
9. Prepare Student mark sheet using MS EXCEL
10. Create a chart for result analysis using MS EXCEL
11. Prepare a mark list for following conditions using data filter and data sort in MS EXCEL
    a) Prepare mark list in ascending order.
    b) Average is greater than or equal to 60.
    c) Average is between 50 and 60.

    d) Average is below 40

12. Design organizational chart for Arts and Science College using POWER POINT

13. Create a power point presentation to advertise a product using Slide Transition and Custom animation

14. Create a database to student's Mark sheet using MS Access

15. Create a data base to employee pay roll using MS Access

17UNM44	PART IV : NMEC- II WEB DESIGNING -LAB	SEMESTER - IV

Total Credits: 2

Hours per Week: 2

PREAMBLE:

- Understand the importance of the web as a medium of communication.
- Understand the principles of creating an effective web page, including an in-depth consideration of information architecture.
- Become familiar with graphic design principles that relate to web design and learn how to implement these theories into practice.
- Develop skills in analyzing the usability of a web site.
- Learn the language of the web: HTML and CSS.

CONTENTS

1. Create Tables using colspan and rowspan
2. Linking using Image map
3. Embedding flash file in HTML
4. Create web page in HTML using frames
5. Apply effects to text and image using CSS
6. Change the font text color and background picture.
7. Displaying the radio button and combo box elements in the text box
8. Moving text or image with mouse
9. Checking the shift key, Right mouse button, Left mouse button is pressed or not and finding X, Y coordinates.
10. Changing the background color using mouse over.
11. Displaying the text in the status bar
12. Movement of text of different boxes into single text box
13. Program for Personal Details using XML and DTD
14. Program for State Details using XML and CSS
15. Program for College Details using XLINK

SELF STUDY PAPERS

17UCSSS1	DATA SCIENCE AND BIGDATA ANALYTICS

PREAMBLE:

- This course is offered in Third semester as a self study course of B.Sc Computer Science, on successful completion the students will earn Extra Credits.

- This course introduces Data Science and Big Data Analytics and the benefits it can provide to business. Students learn the main concepts in relation to Big Data storage and analytics.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	Understand fundamentals of data science.	K1
CO2	Demonstrate knowledge of big data analytics.	K2
CO3	Understand conceptually how Big Data is stored	K3
CO4	Understand how Big Data can be analyzed to extract knowledge	K2
CO5	Demonstrate the ability to think critically in making decisions based on data and deep analytics.	K2

Mapping with Programme Outcomes

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

S- Strong; M – Medium; L- Low

17UCSSS1	DATA SCIENCE AND BIGDATA ANALYTICS

Total Credits: 1

CONTENTS

UNIT - I

Big Data- From the Business Perspective –Characteristics Of Big Data – Importance Of Big Data- Big Data Analytics

UNIT - II

Introduction to data science – Working with data at scale – Data scientist – SMAQ for Big Data - Big data and semantic web

UNIT - III

History of hadoop – Components of Hadoop- Application development – Getting data into Hadoop

UNIT - IV

MapReduce- Scaling out – Hadoop Streaming –pipes – Distributed file system- concepts – interfaces – archieves.

UNIT - V

Hadoop I/0 – Data integrity – Compression- Serialization – File based data structure

TEXT BOOKS:

1. Tom White, Hadoop: The Definitive Guide, O'Reilly Media publications,2009.

2.Paul C.Zikopolus, Chris Eaten, Dirk Deroos, Thomos Deutsch, George Lapis, Understanding Big Data : Analytics For Enterprise Class Hadoop And Streaming Data, TATA Mcgrow Hill Publications, 2012.

REFERENCE BOOK:

1.Philipp K. Janert, Data Analysis with Open Source Tools, O'Reilly Media publications,2011.

17UCSSS2	ENTERPRISE RESOURCE PLANNING

PREAMBLE:

- The capability to streamline different organizational processes and work flows

- The ability to effortlessly communicate information across various departments

- Improved efficiency, performance, and productivity levels

- Implement Improved customer service and satisfaction

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

CO Number	CO Statement	Knowledge Level
CO1	Learn fundamental concepts of ERP	K1
CO2	Identify implementation challenges	K2
CO3	Examine operation and maintenance in ERP	K3
CO4	Understand market place	K1
CO5	Discussion on Enterprise Application Integration	K2

Mapping with Programme Outcomes

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

S- Strong;   M – Medium;   L- Low

17UCSSS2	ENTERPRISE RESOURCE PLANNING

Total Credits: 1

CONTENTS

UNIT - I

ERP - An Overview, Benefits of ERP - ERP & related Technologies - BPR, Data Warehousing, Data mining, OLAP, SCM, CRM.

UNIT - II

Implementation Challenges - Strategies - Life Cycle - Pre-Implementation Tasks - Requirements Definition - Methodologies - Package Selection - Project Team - Process Definition - Vendors & Consultation - Data Mitigation -Project management & Monitoring - Post Implementation activities

UNIT - III

Operation & Maintenance - Performance Measurement - Maximizing ERP Software - Business Modules - Finance - Manufacturing - HR Plant maintenance - Materials management - Quality management - Marketing - Sales- Distribution & Service

UNIT - IV

Market place - Dynamics - SAP AG - Oracle - People Soft - JD Edwards - QAD Inc - SSA Global - Lawson Software - Epicor – Intuitive

UNIT - V

Enterprise Application Integration - ERP & E-business - ERP II - Total quality management - Future Directions - Trends in ERP.
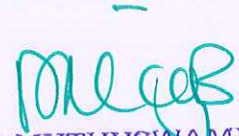
TEXT BOOKS:

1. *Alexis Leon,* " **ERP Demystified" II Edition** , Tata McGraw Hill, New Delhi, 2000

2. *Alexis Leon,*" **Enterprise Resource Planning:** II Edition, Tata McGraw Hill.

REFERENCE BOOK:

1. *Vinod Kumar Crag and N.K.Venkitakrishnan*, "**Enterprise Resource Planning – Concepts and Practice** ", Prentice Hall of India, New Delhi, 1999

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