APPENDIX - AS

MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

B.Sc. Information Technology (Semester)

(with effect from 2018 onwards)

REGULATIONS AND SYLLABUS

1. **Introduction of the Programme:**

   Information Technology prime motif focuses on databases and networking eton. In general IT tends to focuses on the mathematical and theoretical foundation of computing rather than emphasizing specific technologies.

2. **Eligibility for Admission:**

   A Candidate should have studied **+2 level Mathematics** in the **10 + 2 stream**.

3. **Objectives of the Programme:**

   To prepare the students to manage the software components in a computer independently and to be a Programmer.To motivate the students to take up higher studies in Information Technology and other streams.

4. **Outcome of the Program:**
   - Graduates of this Program becomes a dynamic Programmer / Network Designer / System Administrator / IT Consultants / Web Designer with updated Web Development Technologies / System Engineer.
   - Performs technological tasks relating the processing, storing and communication of information between computers, Mobile phones and other electronic devices.
   - IT emphasizes the secure management of large amounts of variable information and its accessibility via a wide variety of systems both local and World Wide.
   - Facilitates the development and application of problem solving skills in students.

5. **Duration of the Course:**

   The students shall undergo the prescribed course of study for a period of not less than three academic years (Six semesters).

6. **Medium of Instruction :** English
7. **Subjects/ Structure of Course Study :** See Appendix – IT1
8. **Scheme of Examinations/ Structure of Question Paper:** : See Appendix - IT2
9. **Detailed Syllabus**: See Appendix – IT3
10. **Eligibility for the Degree:**
    i)   A Candidate shall be eligible for the award of the degree on completion of the prescribed course of study and passing all the prescribed external examinations.
    ii) Attendance progress, internal examinations, conduct certificate from the Head of the Institution shall be required for taking the external examination.
    iii) The passing minimum and the ranking are as per the existing rule of the Choice Based Credit System for the affiliated college of the University.

With Effect from 2016-2017 and afterwards.

Sem.	Subjects							Total Hours	Total Credits
I	T1(6) [3]	E1(6) [3]	CS1(4) [4]	CS2(6) [4]	AS1(4) [4]	SBS1(2) [2]	NME1(2) [2]	30	22
II	T2(6) [3]	E2(6) [3]	CS3(4) [4]	CS4(6) [4]	AS2(4) [4]	SBS2(2) [2]	NME1(2) [2]	30	22
III	T3(6) [3]	E3(6) [3]	CS5(4) [4]	CS6(4) [3]	CS7(4) [4]	AS3(4) [4]	SBS3(2) [2]	30	23
IV	T4(6) [3]	E4(6) [3]	CS8(4) [4]	CS9(4) [3]	CS10(4) [4]	AS4(4) [4]	SBS4(2) [2]	30	23
V	CS11(5) [4]	CS12(5) [4]	CS13(5) [4]	CS14(6) [4]	ES1(5) [4]	EVS(2) [2]	SBS5(2) [2]	30	24
VI	CS15(5) [4]	CS16(6) [4]	CS17(5) [4]	ES2(5) [4]	ES3(5) [5]	VE(2) [2]	SBS6(2) [2]	30	25
							Extension Activity		1
							TOTAL CREDITS		140

Abbreviations:

( )	–	Number of Hours	[ ]	–	Number of Credits
T	-	Tamil;	E	-	English
CS	-	Core Subject	AS	-	Allied Subject
SBS	-	Skill Based Subject	NME	-	Non Major Elective
ES	-	Elective Subject	VE	-	Value Education
EVS	-	Environmental Studies	EA	-	Extension Activity

I SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T1	Tamil	6	3	25	75
2	E1	English	6	3	25	75
3	CS1	Introduction to Information Technology and Programming in C	4	4	25	75
4	CS2	**Lab 1** : Programming in C	6	4	40	60
5	AS1	Mathematical Foundations	4	4	25	75
6	SBS1	**Lab 2 :**Linux Programming	2	2	40	60
7	NME1	Introduction to Information Technology	2	2	25	75
		Total	30	22		

II SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T2	Tamil	6	3	25	75
2	E2	English	6	3	25	75
3	CS3	Object Oriented Programming with C++	4	4	25	75
4	CS4	**Lab 3:** Object Oriented Programming using C++	6	4	40	60
5	AS2	Resource Management Techniques	4	4	25	75
6	SBS2	**Lab 4**: Desktop Publishing	2	2	25	75
7	NME2	Internet and its Applications	2	2	25	75
		Total	30	22		

III SEMESTER

S No.	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T3	Tamil	6	3	25	75
2	E3	English	6	3	25	75
3	CS5	. NET Programming using ASP	4	4	25	75
4	CS6	**Lab 5**: . NET Programming using ASP	4	3	40	60
5	CS7	Data Structures and Computer Algorithms	4	4	25	75
6	AS3	Digital Principles and Computer Organization	4	4	25	75
7	SBS3	**Lab 6:** Multimedia	2	2	40	60
		Total	30	23		

IV SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T4	Tamil	6	3	25	75
2	E4	English	6	3	25	75
3	CS8	Java Programming	4	4	25	75
4	CS9	**Lab 7**: Java Programming	4	3	40	60
5	CS10	Operating System Concepts	4	4	25	75
6	AS4	Numerical Methods	4	4	25	75
7	SBS4	**Lab 8:** Web Programming Lab	2	2	40	60
8	EA	Extension Activities		1	100	
		Total	30	24		

V SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	CS11	Computer Networks	5	4	25	75
2	CS12	Software Engineering	5	4	25	75
3	CS13	Relational Database Management System	5	4	25	75
4	CS14	**Lab 9** : RDBMS Lab	6	4	40	60
5	ES1	1. Mobile Computing 2. Software Testing 3. Biometrics	5	4	25	75
6	EVS	Environmental Studies	2	2	25	75
7	SBS5	**Lab 10 :**Networking	2	2	40	60
		Total	30	24		

VI SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	CS15	Android Programming	5	4	25	75
2	CS16	**Lab 11** : Android Programming	6	4	40	60
3	CS17	Computer Graphics	5	4	25	75
4	ES2	1. Artificial Intelligence 2. Compiler Design 3. Python Programming	5	4	25	75
5	ES3	Project Work / Viva-Voce	5	5	25	75
6	VE	Value Education	2	2	25	75
7	SBS6	Quantitative Aptitude	2	2	25	75
		Total	30	25		

Non-Major Elective Courses to be offered to the students other than Department ofInformation Technology

NME1 -Introduction to Information Technology

NME2 – Internet and its Applications

Appendix – IT2

Scheme of Examination /Question Paper Pattern

For Theory Subjects:

A candidate has to prepare mathematical and theoretical answers for both the questions and covering the parts.

For Internal Marks:

i.	Test	:	10 Marks (Average of best two tests)
ii.	Assignment	:	5 Marks
iii.	Seminar / Group Discussion	:	5 Marks
iv.	Peer – Team Teaching	:	5 Marks

Total : 25 Marks

External Question Paper Pattern:

Time: 3 Hours   **Max. Marks: 75**

Part – A

Answer all the questions   **(10*1=10)**

Ten Questions, two questions from every unit: *Multiple Choice questions.*

Part – B

Answer all the questions   **(5*7=35)**

Five Questions, one question set from every unit: *Either …Or… type*

Part – C

Answer any three questions   **(3*10=30)**

Five Questions, one question from every unit

The following list of parameters taken into account for the evaluation of the Practical examination and Project work.

For Practical Subjects:

A candidate has to prepare Algorithm / Procedure for both the questions covering both the parts. The following list of parameters taken into account for the evaluation of practical examination.

Total Marks: 100 (Internal: 40 marks,   External: 60 Marks)

Parameters:

For Internal Marks:

v.	Average of two tests	:	30
vi.	Record Work	:	5
vii.	Lab Performance	:	5
	Total	**:**	**40**

For External Marks:

i.	Aim, Procedure / Algorithm and Program:		15
ii.	Coding and Compilation	:	10
iii.	Debugging	:	15
iv.	Results	:	10
v.	Viva	:	10
	Total		**60**

Note: The External Examiner can fix other exercises also other than those found in the list *(Syllabus)* in consultation with the Internal Examiner without violating the scope of the prescribed syllabus.

For Project Work:

The combined project shall be undertaken by the students as a team of two.

Total Marks: 100 (Internal: 25 marks,   External: 75 Marks)

Parameters:

For Internal Marks:	Two review meetings	: 2 X 7.5	= 15 Marks
	Overall Performance	:	= 10 Marks
For External Marks:	Project Report	:	= 25 Marks
	Project demo & Presentation	:	= 30 Marks
	Viva-Voce	:	= 20 Marks

Appendix – IT3

(Detailed Syllabus)

CS1: Introduction to INFORMATION TECHNOLOGY and Programming in C

(4 Hours – 4 Credits)

UNIT I

    Introduction to Computers: Introduction – Importance of Computers – Characteristics of Computer – Uses of Computers – Overview of Computer System – Parts of a Computer – Importance of Hardware – **Classification of Computers:** Introduction – Portable computers – Personal Computers – Workstations – minicomputers – mainframes – Super Computer – Comparison of Computers – **Central Processing Unit**: Introduction – CPU – Memory – Registers – Instruction set – Machine Cycle – How the CPU and Memory work. **Computer Memory:** Introduction –Random Access Memory – Read Only Memory.

UNIT II:

    Secondary Storage Devices: Introduction – Classification of Secondary Storage Devices – Advantages of Secondary Storage Devices – Magnetic Disks – Optical Disks – Magnetic Tape – Zip Disk – Jaz Disk – Super Disk – MO Disk – **Input Devices**: Introduction – keyboard – Mouse – Trackball – Game Controllers – Scanners – Barcode Reader –OCR – Dgitizer – Voice Recognition – web Cams – Digital Camera – Video Cameras. **Output Devices:** Introduction – Monitor – Printer – Plotter.

UNIT III:

    Overview of C: History of C – Importance of C – Basic Structure of C Programs – Programming Style – Character Set – C Tokens – Keywords and Identifiers – Constants, Variables and Data Types – Declaration of Variables – Defining Symbolic Constants – Declaring a variable as a constant – overflow and underflow of data – Operators and Expressions: Arithmetic, relational, logical, assignment operators – increment and decrement operators, conditional operators, bitwise operators, special operators – Arithmetic Expressions- Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity – Mathematical functions.

UNIT IV:

    Managing I/O Operations: Reading and Writing a Character – Formatted Input, Output – Decision Making & Branching: if statement - if else statement - nesting of if else statements - else if ladder – switch statement – the ?: operator – goto statement – the while statement – do statement – the for statement – jumps in loops.

Arrays: One-Dimensional Arrays – Declaration, Initialization – Two-Dimensional Arrays – Multi-dimensional Arrays – Dynamic Arrays – Initialization. Strings: Declaration, Initialization of string variables – reading and writing strings – string handling functions.

UNIT V:

User-defined functions: need – multi-function programs – elements of user defined functions – definition – return values and their types – function calls, declaration, category – all types of arguments and return values – nesting of functions – recursion – passing arrays, strings to functions – scope visibility and life time of variables. Structures and Unions: Defining a structure – declaring a structure variable – accessing structure members – initialization – copying and comparing – operation on individual members – array of structures – arrays within structures – structures within structures – structures and functions – unions – size of structures – bit fields.

Pointers: Accessing the address of a variable – declaring, initialization of pointer variables – accessing a variable through its pointer – chain of pointers – pointer increments and scale factors – pointers and character strings – pointers as function arguments – pointers and structures. Files: Defining, opening, closing a file – IO Operations on files – Error handling during IO operations – command line arguments.

Text Books:

1. Introduction to Information Systems, Alexis Leon and Mathews Leon, Mc-Graw Hill Education. Reprint 2008.

    Unit I : Chapters 2,3,4

    Unit II : Chapters 5,6,7,8

2. Programming in ANSI C, E.Balagurusamy, 6rd Edition, Tata McGraw Hill Publishing Company, 2012.

    Unit I: Chapter 1 (Except 1.3-1.7, 1.10-1.12),

        Chapter 2 (Except 2.9, 2.13),

        Chapter 3 (Except 3.13)

    Unit II: Chapters 4 – 6

    Unit III: Chapter 7,

        Chapter 8 (Except 8.5, 8.6, 8.7, 8.9, 8.10)

    Unit IV: Chapter 9 (Except 9.20), Chapter 10

    Unit V: Chapter 11 (Except 11.8, 11.10, 11.12, 11.14, 11.15, 11.17),

        Chapter 12 (Except 12.6)

Reference Books:

1. Introduction to Computers, Peter Norton, sixth edition, Mc-Graw Hill Companies.

2. Fundamentals of IT, Alexis Leon and Mathews Leon, Second edition, Vikas publishing.

3. Programming with C,Schaum's Outline Series, Gottfried, Tata McGraw Hill, 2006

4. Programming with ANSI and Turbo C, Ashok N.Kamthane , Pearson Education, 2006

5. H. Schildt, C: The Complete Reference, 4th Edition, TMH Edition, 2000.

6. Kanetkar Y., Let us C, BPB Pub., New Delhi, 1999.

CS2: LAB1: Programming in C

(6 Hours – 4 Credits)

Program List

Write a C Program for the following :

1. To find the sum of digits

2. To check whether a given number is Armstrong or not

3. To check whether a given number is Prime or not

4. To generate the Fibonacci series

5. To display the given number is Adam number or not

6. To print reverse of the given number and string

7. To find minimum and maximum of 'n' numbers using array

8. To arrange the given number in ascending order

9. To add, subtract and multiply two matrices

10. To calculate NCR and NPR

11. To find the grade of a student using else if ladder

12. To implement the various string handling function

13. To create an integer file and displaying the even numbers only

14. To calculate quadratic equation using switch-case

15. To implement the various string handling function

16. To generate student mark list using array of structures

17. To create and process the student mark list using file

18. To create a array using pointer.

19. To create and process inventory control using file

20. To create and process electricity bill using file

AS1: MATHEMATICAL FOUNDATIONS

(4 Hours – 4 Credits)

UNIT I:

Logic - introduction - connectives - truth table - Tautology implication and equivalence of formulae.

UNITII:

Set theory - Relations, equivalence relations - partial order - Function - binary operations - groups: Definition and examples - elementary properties.

UNITIII:

Matrices: Elementary transformations - Inverse of a matrix - Rank of a matrix - Simultaneous linear equations - Cayley Hamilton theorem.

UNITIV:

Graph theory: Introduction -Definition and examples - degrees and sub graphs - matrices-connectedness: walks, trials and paths, connectedness and components.

UNIT V:

Eulerian graphs - Hamilton graph - **Trees**: characteristics of trees, centre of a tree.

Text books:
1.Modern Algebra by S.Arumugam& A. ThangapandiIsaac,Scitech publications 2005.
2.Discrete Mathematics by Dr.M.K.Venkatraman, Dr.N.Sridharan, Dr.N.Chandrasekaran, National Publishing Company,2000.
3.Invitation to Graph Theory by S.Arumugam and S.Ramachandran, Scitech Publications,2005,Chennai.
        UNIT I: (Text Book 1)Chapters 1,2,3.1,3.2
        UNIT II: (Text Book 2)Chapter 9
        UNIT III: (Text Book 1)Chapters 7.3 - 7.7
        UNIT IV: (Text Book 3) Chapters 2.0,2.1, 2.2, 2.3, 2.8, 4.0, 4.1, 4.2
        UNIT V : (Text Book 3)Chapters 5,6

SBS1: LAB 2 :LINUX PROGRAMMING

(2 Hours – 2 Credits)

Write a Linux Script for the following:

1. To find the number of users who have logged in.
2. To see the current date, user name and current directory.
3. To print the numbers 5,4,3,2,1 using While loop.
4. To set the attributes of a file.

5. To convert lowercase to uppercase usingtr utility.
6. To copy and rename a file.
7. To add 5 numbers and find the average.
8. To convert a decimal number to hexadecimal number.
9. To find the factorial of a number.
10. To check for whether the given number is palindrome or not.
11. To display "Hello World" in Bold, Blink effect and in different colors like red, green etc.
12. To display a multiplication table.
13. To perform arithmetic operations using case.
14. To add two real numbers.
15. To display the following pattern:
      1
      22
      333
      4444
      55555
16. To find the sum of digits and reversing of a given number.
17. To display the student mark details.
18. To prepare electricity bill.
19. To sort the numbers in ascending order.
20. (i) To create and append a file (ii) To compare two files..

NME1: INTRODUCTION TO INFORMATION TECHNOLOGY

(2 Hours – 2 Credits)

UNIT I:

Introduction to computers: Introduction – Importance of computers- characteristics of computers- uses of computers – overview of the computer system – parts of a computer – importance of hardware. **Classification of computers:** Introduction – Portable computers- Personal computers(PCs)- workstations- minicomputers- mainframes-supercomputer-comparison of computers.

UNIT II:

Central Processing Unit(CPU): Introduction – Central Processing Unit(CPU)- memory-registers – Factors affecting processor speed- instruction set- machine cycle- How the cpu and memory work. **Computer Memory:**Introduction – evaluation of memory requirements- Random Access Memory(RAM) – Read Only Memeory(ROM).

UNIT III:

Secondary storage devices: Introduction- classification of secondary storage devices- advantages of secondary storage- magnetic disks-Optical disk- magetic tape- zip disk-jaz disk-super disk-magneto-optical (MO) disk.**Input devices and Technologies:** Introduction – keyboard- mouse- trackball-game controllers-scanners- barcode reader-

Optical Character Recognition(OCR)-digitizer- voice recognition – web cams- digital cameras- video cameras.

UNIT IV:

Output devices and technologies: Introduction – Monitor-Printer-plotter. **Computer software:**Introduction- what is computer software?- hardware/software interaction-software categories-classification of software-operating systems-utilities-compilers and interpreters.

UNIT V:

Telecommunication and Networks: Types of networks- network toplogies-network protocols- network architecture- networks standardization. **Internet and WWW:** What can I do on the internet?- Internet addressing- The World Wide Web (WWW) – web pages and HTML-web browsers-searching the web.

Text Book:

Fundamental of Computers, V.RajaRaman,Prentice-Hall Of India Pvt. Limited, Fifth edition,2010.

Unit I : Chapters 2, 3

Unit II: Chapters 4, 5

Unit III: Chapters 6, 7

Unit IV: Chapter 8, Chapter 9(Pg. No. 101- 106)

Unit V: Chapter 12(Pg. No. 156-163), Chapter 13 (Pg. No. 168- 170, 177- 187)

Reference Book:

1. Fundamentals of Information Technology,Alexis Leon, Mathews Leon , Second Edition, Leon Vikas Pvt. Ltd., Chennai.
2. Computer Fundamentals, PradeepK.Sinha, PritiSinha, Sixth edition, BPB Publications.
3. Fundamental of Computers, ReemaThareja, Oxford Publications, Press India, 2014.

CS3: OBJECT ORIENTED PROGRAMMING WITH C++
(4 Hours - 4 credits)

UNIT I:

Software Crisis – Software Evolution – Basic Concepts of Object-Oriented Programming – Benefits of OOP – Object-Oriented Languages - Applications of OOP – Application of C++ - Structure of a C++ Program – Tokens – Keywords – Identifiers – Basic Data Types – User-defined Data types – Derived data types – Symbolic constants – Type compatibility – Declaration of variables – Dynamic initialization of variables – Reference variables – Operators in C++ - Manipulators – Type cast operator – Expressions

and their types-Implicit conversions – Control structures – The main function – Function prototyping – inline functions – Function overloading.

UNIT II:

Specifying a class – Defining member functions – Making an outside function inline – Nesting of member functions – Private member functions – Array within a class – Memory allocation for objects – Static data members – Static member functions – Array of objects - Objects as function arguments – Friendly functions – Returning objects – Constant member functions – Constructors – Parameterized constructor – Multiple constructors in a class – Constructors with default arguments – Dynamic initialization of objects – Copy constructor – Destructors.

UNIT III:

Defining operator overloading – Overloading unary operators – Overloading binary operators – Overloading binary operators using friend function – Rules for overloading operators - Defining derived classes – Single inheritance – Making a private member inheritable – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance - Virtual base classes – Constructors in derived class – Member classes: Nesting of classes.

UNIT IV:

Pointer to objects – this pointer – Pointers to derived classes – Virtual functions – Pure virtual functions – C++ Stream classes – Unformatted I/O operations – Managing output with manipulators.

UNIT V:

Classes of file stream operations – Opening and Closing files – Detecting end of file – More about open() function – File modes, File pointers and their manipulation – Sequential input and output operations – Command-line arguments- Templates: class templates and function templates.

Text Book:
Object Oriented Programming with C++**,** E. Balagurusamy,McGraw Hill Education (India) Private Limited, New Delhi, *Sixth Edition***-**2013

        Unit I –   Chapter 1 (Except 1.3, 1.4),
                           Chapter 2 (Only 2.6),
                           Chapter 3 (Except 3.20, 3.21, 3.22),
                           Chapter 4
        Unit II –   Chapter 5 (Except 5.18, 5.19),
                           Chapter 6 (Except 6.8, 6.9, 6.10)
        Unit III – Chapter 7
                           Chapter 8
        Unit IV – Chapter 9,
                           Chapter 10
         Unit V – Chapter 11 (Except 11.8),
                           Chapter 12 (Only 12.2, 12.3 and 12.4)

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Reference Books:

1. C++ - The Complete Reference, Herbert Schildt, TMH, 1998

2. C++ How to Program, Paul Deitel, Harvey Deitel, PHI, Ninth edition (2014)

3. Ashok N.Kamthane, Object Oriented Programming with ANSI & Turbo C ++, Pearson Education, 2006

4. Object-Oriented Programming With C++, PoornachandraSarang, 2nd Edition, PHI Learning Private Limited, New Delhi, 2009

5. Object-Oriented Programming Using C++, Alok Kumar Jagadev, Amiya Kumar Rath And Satchidananda Dehuri, Prentice-Hall of India Private Limited, New Delhi, 2007.

CS4: LAB 3: OBJECT ORIENTED PROGRAMMING WITH C++
(4 Hours - 3 credits)
Section A
1. Printing Prime numbers between two given numbers.
2. Printing 3 digit numbers as a series of words. *(Ex. 543 should be printed out as Five Four Three).*
3. Finding area of geometric shapes using function overloading.
4. Inline functions for simple arithmetic operations.
5. Demonstrating the use of Pre-defined Manipulators.
6. Demonstrating the use of friend function.
7. Creating student mark list using array of objects,
8. Demonstrating constructor overloading.
9. Overloading the unary – operator.
10. Demonstrating single inheritance.
11. Demonstrating the use of **"this"** pointer.
12. Designing our own manipulator.
13. Illustrating function templates.
14. Illustrating class templates.
Section B
1. Overloading the binary + operator.
2. Demonstrating Multiple inheritance.
3. Demonstrating Multilevel inheritance.
4. Demonstrating Hierarchical inheritance.
5. Demonstrating Virtual functions.
6. Processing mark list using binary file.
7. Count number of objects in a file.
8. Demonstrating the use of Command-line arguments.

AS2: RESOURCE MANAGEMENT TECHNIQUES
(4 Hours – 4 Credits)

UNIT I:

Development of OR: Definition of OR – Modeling- Characteristics and Phases-Tools,

Techniques& Methods-scope of OR. Linear Programming Problem: Formulation - Slack & surplus variables-Graphical solution of LPP.

UNIT II:

Simplex Method: Computational Procedure-Artificial variables -Big- M method-Concept of duality in LPP-Definition of primal dual problems-General rules for converting any primal into its dual.

UNIT III:

Assignment Problem: Mathematical formulation of assignment problem-Method for solving assignment problem.

UNIT IV:

Transportation Problem: Mathematical formulation of Transportation problem - Methods for finding IBFS for the Transportation Problems – MODI Method for finding the optimum solution for the Transportation Problems.

UNIT V:

Network Scheduling of Projects by PERT/CPM Techniques: Introduction-PERT/CPM-Critical Activities and Critical Path-Minimum Cost Scheduling of Projects by CPM-PERT Method

Text Book:
1. Operations Research, S.D.Sharma, KedarNath Ram Nath& Co.
    Unit I:Chapter-1(1.1, 1.2, 1.4,1.,1.8,1.9,1.10,1.11)
        Chapter-3 (3.1, 3.2, 3.3,3.3.1,3.3.2,3.3.3.,3.3.4,3.4,3.5)
    Unit II: Chapter-5 (5.1,5.2,5.2.1,5.3,5.4,5.5.4)
        Chapter- 7 (7.1,7.2,7.3,7.4)
    Unit III: Chapter 11(11.2,11.3,11.4)
    Unit IV: Chapter-12 (12.2 to 12.8)
2. Operations Research, T.Veerarajan, Universities Press(India) Private Limited,2017
        Unit V: Chapter 13 (13.0, 13.1, 13.2, 13.3, 13.4)

Reference Books:
   1. Operation Research, R.Sivarethinamohan, Tata McGraw Hill,2005.
   2. Operation Research,Nita H.Shah, Ravi M.Gor and Hardiksoni,Prentice-Hall of India Pvt. Ltd.,New Delhi 2008.

SBS2 : LAB 4: DESKTOP PUBLISHING

(2 Hours – 2 Credits)

1. **Photoshop :**
   a. Basic tools used in Photoshop.
   b. Design an image by cutting the objects from 3 files and organize them in a single file and apply feather effects.
   c. Design an image by applying mirror effect.
   d. Design an image by extracting flower only from given photographic image
   e. Design an image by applying Text and Transform Tool.
   f. Design an image by using patch or healing brush tool to remove damaged parts of an image.
   g. Design an image by applying Color Balance to change the color of an image.
   h. Design an image by using Clone Stamp Tool, Smudge Tool.
   i. Design an image by applying Blur Filter.
   j. Design an image by applying Lighting effect Filter.
   k. Design an image by applying Blending options to make a text effect.
   l. Design an image by applying rainbow effect.
   m. Design an image by applying text masking effect.
   n. Design a college id card using any tools.
   o. Design a banner for your college with images and text.

2. CorelDraw :

   a. Creating a drawing, set rulers, grid, guidelines, and view document.

   b. Drawing, moving, shaping objects, lines and curves, dimension line, working with style and templates

   c. Grouping/ungrouping, locking/unlocking objects, using layers, aligning and editing objects – pattern/texture fills, editing/applying end shapes, splitting/erasing portions, positioning, moving, stretching, and rotating objects

   d. Formatting text and paragraph, creating and adding blends, envelopes, extrusions, 3D special effects, different formats and layouts, previewing, sizing and printing a job.

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NME2 :INTERNET AND ITS APPLICATIONS

(2 Hours – 2 Credits)

UNIT I:

Introduction to Internet

Introduction - Some Statistics-What is Internet-How does Internet Work?-What is Special about the Internet?-A Brief History of Internet-You Don't Have to be a Mechanic to Drive a Car!.

Getting Connected

Introduction-Dial-up Connection-Dedicated Lines-ISDN-DSL-Cable Modem-Satellite Internet-Cellular broadband-Wireless broadband-Wired and Wireless Broadband Internet Access-Choosing the best Internet Connection-Web Workout.

UNIT II:

World Wide Web (WWW)

Introduction-Internet and Web-How the Web Works?-A Brief History of WWW-Web Workout.

Web Browsers and Web Browsing

Types of Browsers-Graphical Browser-Bookmarks or Favorites-Browser Plug-Ins-Browser Add-ons and Extensions-Text Based Browsers-Web Browsing-Web Browsing Tips-Keyboard Shortcuts-Keep Track of Your Time-Use Bookmarks of Favorites-Browse Offline-Use a Faster Connection-Use a Download Manager-Use the Right Mouse Button-Use the Back and Forward Buttons-Cut and Paste URLs-Use the History-Web Workout.

Searching the Web

Introduction-Information Sources-Organizations-Companies-Newspapers and the Media-Electronic Books-Library Catalogs and Bookshops-Reference-Finding Information on the Internet-Searching the Web-Web Index-Web Directory-Search Engines-Mete-search Engines-Making Your Search-Improve Your Searching-Tips for Internet Research-Invisible Web-Web Workout.

UNIT III:

Internet

Introduction-IP Address-Domain Names-Domain Name System (DNS)-Uniform Resource -Locator (URL)-Electronic Mail Addresses-Web Workout.

Internet Protocols

Introduction-Transmission Control Protocol/Internet Protocol(TCP/IP)-File Transfer Protocol(FTP)-Hypertext Transfer Protocol(HTTP)-Telnet-Gopher-WAIS-Web Workout.

UNIT IV:

E-mail

Introduction-How E-mail works?-Why use E-mail-E-mail—Names and Addresses-Mailing Basics-Address Book-File Attachments-   Signature-Setting Priority-Replying and Forwarding E-Mail Messages-Customizing your E-Mail Program-How private is the E-mail-E-mail Ethics-Spamming-E-mail—Advantages and Disadvantages-Tips for effective e-mail use-E-mail Safety Tips -Smileys (Emotions)-Free E-mail Providers-Web Workout.

Websites and web Pages

Introduction-Web Design- Creating a website- Web Hosting-Website Promotion-Web Workout.

UNIT V:

Electronic Publishing

Introduction-Electronic Publishing-E-book Readers-Economics of E-Publishing-Applications of E-Publishing- E-Publishing-Advantages and Disadvantages-Web Workout

Social Networking

Introduction-Social Networking Timeline- Why Social Networking?-Dangers of Social Networking-Getting Connected-Finally-Web Workout

Newsgroups, Mailing Lists and Discussion Forums

Newsgroups- Newsgroup Organization-Working of Newsgroups- The   Usenet Network-Accessing a –Newsgroup-How to behave?-Mailing Lists-Classification of Mailing Lists- Announcement vs. Discussion Lists-Public vs. Private Lists-Moderated vs. Un-moderated Lists-Operation of a Mailing List-Subscribing to a Mailing List-Mailing List Archives-Mailing List Software-Discussion Forums-Discussion Forum Software-Discussion on the Internet-Web Workout.

Chat, Instant Messaging (IM), Internet Telephony (VoIP) and Videoconferencing

Internet Chat-Internet Relay Chat (IRC)-Working of IRC-IRC Clients-Chatting on Web-Instant Messaging-How IM Works?-IM from the Web-Internet Telephony-Advantage of Internet Telephony-Internet Telephony Service Providers-Videoconferencing-Web Workout.

Text Book:

INTERNET for EVERY ONE, Alexis Leon Mathews Leon, Leon Press Chennai,2012
        Unit 1: Chapters 1, 2, 3
        Unit 2: Chapters 4, 5, 6
        Unit 3: Chapters 8, 9
        Unit 4: Chapters 10, 11
        Unit 5: Chapters 14, 15, 16, 17

Reference Book:

1. Internet & Web Technologies, Raj Kamal, TMH Pvt. Ltd., 2011.
2. Web Technology: A Developer's Perspective, N.P.Gopalan, J.Akiladeswari, PHI Learning Pvt Ltd, second edition.
3. Introduction to Web Technology, Pankaj Sharma, Second edition, S.K.Kataria and sons,2009

CS5 : . NET Programming using ASP
(4 Hours – 4 credits)

Unit I

Introduction to ASP.NET 2.0:

A Little Bit of History –The Goals of ASP.NET 2.0 .Visual Studio 2005: The Document Window –The Toolbox –The Solution Explorer –The Server Explorer – The Properties Window –Lost Windows –Other Common Visual Studio Activities. Changes to ASP.NET 1.0 Controls: Label Server Control –Button, LinkButton, and ImageButtonServer Controls – DropDownList, Listbox, Checkboxlist, and Radiobuttonlist Server Controls.

Unit II .

Changes to ASP.NET 1.0 Controls:

Image Server Control –Table Server Control – Literal Server Control –AdRotator Server Control – Panel Server Control –Validation Server Controls. Application and Page Frameworks: Application Location Options –The ASP.NET Page Structure options –New Page Directives –New Page Events –Cross-Page Posting – New Application Folders – Compilation.

Unit III

New Ways to Handle Data:

The New Data Source Controls –The Data- Bound Server Controls –The sqlDataSource and Gridview Controls –The Access DataSource and DetailsView Controls – Xml DataSource Control ObjectDataSourceControl – SiteMap DataSource Control – DataSetDataSource Control – Visual Studio 2005 – Connection Strings.

Unit IV

Site Navigation: Site Maps –SiteMapPath Server Control –Treeview Server Control – Menu Server Control – SiteMap Data Provider –SiteMap API.

Unit V

Working with Master Pages: Why Do you Need Master Pages? –The Basics of Master Pages – Coding a Master Page –Coding a Content Page – Specifying Default Content in the Master Page –Nesting Master Pages – Container-Specific Master Pages – Event Ordering –Caching with Master Pages

Text Book

ASP.NET 2.0 Beta Preview – Bill Evjen, WILEY Dreamtech India Pvt.Ltd., Edition 2004

UNIT CHAPTERS :

Unit I	1 , 2, 13
Unit II	13, 3
Unit III	4
Unit IV	5
Unit V	6

Reference Books

1. ASP .NET in 60 minutes a Day Bible, Glenn Johnson,Wiley –Dreamtech India Pvt Ltd, 2003.

2. ASP.NET Developers Guide, G.Buczek, TMH 2002.

3. Programming ASP .NET, Jessey Liberty, O'reilly Publications.

CS6: LAB 5:   .NET PROGRAMMING using ASP

(4 Hours - 3 credits)

Write an ASP.NET Program

1. To change the Foreground color and Background Color of the Textbox

2. To generate Multiplication Table

3. To create an account registration form and perform the following validation

    I. User name (Required Field Validator)

    II. Password

    III. Retype Password(Compare Validator)

    IV. Gender(Required Field Validator)

    V. Email-Id

    VI. Date of Birth(Regular Expression Validator)

    VII. Mobile(Regular Expression Validator)

4. To read and display book details from XML File

5. To create a master page with Site Navigation

6. To display the content of the country details in Tree view control from XML File

7. To display students details from the database(Data source Control)

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8. Working with Page and Forms Using Asp .Net.

9. To Read Student Details From Xml File

10. To Display Vehicle Details In Tree View Control From Xml File

11. Create Any Application Program Using Menu Server Control

12. To Display Employee Details From The Database Using Sitemapdatasource

13. To Read And Display Personal Database Using Xmldatasource Control

14. Create A Web Page For Your Department

15. Send An Mail

CS7: DATA STRUCTURES AND COMPUTER ALGORITHMS

(4 Hours - 4 credits)

UNIT I:

Introduction to data structure: The need for data Structure-Definitions-Data Structures-Arrays: Introduction, range of an array-one dimensional array-two dimensional array-special types of matrices-linked lists: Introduction - benefits and limitations of linked list-Types-singly linked lists-circular linked lists-doubly linked lists.

UNIT II:

Stack: Introduction-ADT stack-implementation of stack- application of stack-**Queue:** Introduction - implementation of basic operations on array based and linked list based queue -circular Queues.

UNIT III:

Trees: Introduction – binary Trees-representation of binary trees-Binary tree Traversals-Recursive procedures of traversal methods-Expression Trees-Threaded Trees-Application of Trees.

UNIT IV:

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

UNIT V:

The Greedy Method: General Method – Knapsack problem – Job Sequencing with deadlines – **Minimum cost spanning trees:** Prim's Algorithm – Kruskal Algorithm – Optimal Storage on tapes – Optimal merge patterns – single source shortest path.

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Text Books:

1. Data Structures, A. Chitra, P. T. Rajan, Vijay Nicol Imprints Pvt Ltd, Second edition,2016.

   Unit I – Chapter 1, 3 (Except Multi-dimensional Arrays) and 4 (Except Simple Algorithms on linked lists, Circular doubly linked lists, multiple linked lists, applications, polynomial representation, polynomial addition, representation of polynomials)

   Unit II – Chapters 5, 6 (Except Tower of Hanoi, Dequeue)

   Unit III – Chapters (Except Priority Queues)

2. Fundamentals of Computer Algorithms, Ellis Horrowitz, SaratajSahni, Galgottia Publications Pvt. Ltd, New Delhi

   Unit IV – Chapter 1 (Except 1.4), Chapter 3 (Except 3.2, 3.9)

   Unit V – Chapter 4 (Except 4.2, 4.6.3)

Reference Books:

1. Data Structure and Algorithm Analysis in C – Mark Allen Weiss – Second Edition, Addison Wesley publishing company, 1997.
2. C and C++ Programming concepts and Data Structures, P.S.Subramanyam, BS Publications, 2013.
3. Data Structures and Algorithms, Alfred V.Aho, John E.Hopcraft and Jeffrey D.Ullman, Pearson Education, Fourteenth Impression, 2013.

AS3: DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

(4 Hours – 4 credits)

UNITI :

Number Systems and Codes: Binary Number system – Binary to decimal –decimal to binary – hexa decimal – ASCII code – Excess-3 Code – Gray code.

Digital Logic: The Basic Gates – NOT, OR, AND - Universal Logic Gates – NOR, NAND.

UNIT II:

Combinatorial Logic Circuits: Boolean Laws and Theorems. - Sum of Products method - Truth table to Karnaugh Map – Pairs, Quads, Octets – Don't Care Conditions- Product-of sums method -Product-of sums Simplifications.

Data Processing Circuits: Multiplexers – Demultiplexers-1-of-16 Decoder – BDC-to-decimal Decoders – Seven-segment Decoders – Encoders – Exclusive-OR Gates- Parity Generators and Checkers.

UNIT III:

Arithmetic Circuits: Binary Addition- Binary Subtraction – 2'S Complement Representation - 2'S Complement Arithmetic – Arithmetic Building Blocks. Flip Flops: RS Flip Flops, Edge Triggered RS Flip Flops, Edge Triggered D Flip Flops, Edge Triggered JK Flip Flops, JK Master Slave Flip Flops.

UNIT IV:

Basic Computer organization and Design: Instruction codes -stored program organization-Computer registers and common bus system-Computer instructions-Timing and control-*Instruction cycle:* Fetch and Decode-Register reference instructions.

Micro programmed Control: Control memory organization-Address sequencing, micro instruction format and symbolic microinstructions-symbolicmicro-program-binary micro-program.

UNIT V:

Central Processing UNIT: General register organization-stack organization-instruction formats-addressing modes-Data transfer and manipulation-Program control.

CISC and RISC-Parallel processing-Pipeline-general consideration.

Input-output organization: Peripheral devices-I/O interface -*Memory organization:* Memory hierarchy-Main memory-Auxiliary memory.

Text Book:

1. Digital Principles and Applications – Donald P Leach, Albert Paul Malvino, GoutamSaha, 8th edition , McGraw-Hill Education, 3rd reprint 2015.
2. Computer System Architecture, M.Morris Mano, Pearson Education,   3rd edition.,2007

UNIT I	5: (5.1 to 5.9) and 2: (2.1 to 2.3)	Text Book 1
UNIT II	3: (3.1 to 3.8) and 4: (4.1 to 4.7)	Text Book 1
UNIT III	6: (6.1 to 6.8)	Text Book 1
UNIT IV	5 (5.1 to 5.5) and 7 (7.1 to 7.3)	Text Book 2
UNIT V	8 (8.1 to 8.8), 9 (9.1 to 9.2),	Text Book 2
	11 (11.1 to 11.5)	
	and 12(12.1 to 12.3)	

Reference Books:

1. Digital Computer Fundamentals, Thomas C. Bartee TMH 2007.

2. Computer Organization and Architecture, V.Rajaraman and T.Radhakrishnan, PHI learning, 5th Print, 2015.

3. Computer Organization, Carl HamacherZvonkoVranesicSafwatZaky, McGraw Hill Education, 5th Edition, 11th reprint, 2015.

SBS3: LAB 6: MULTIMEDIA

(2 Hours – 2 credits)

Flash:

1. Basic tools used in Flash.
2. Develop a Flash application using motion tween.
3. Develop a Flash application using shape tween.
4. Develop a Flash application for ball bouncing using motion guide path.
5. Develop a Flash application for masking effect.
6. Develop a Flash application using layer based animation.
7. Develop a Flash application to represent the growing moon
8. Write action script to play and stop an animation.
9. Write action script to find the biggest of three numbers.
10. Write action script to find the factorial of a number

CS13:JAVAPROGRAMMING

(5 Hours – 4 Credits)

Unit I

Java Evolution : Java History-Java features – How Java differs from C and C++ - Java and Internet – Java and World Wide Web – Web Browsers – Java Support Systems - Java Environment.

Overview of Java Language: Introduction-Simple Java Program – More of Java – An Application with two classes - Java program structure – Java tokens - Java statements – Implementing a Java program – Java Virtual Machine – Command Line Arguments-Programming Style

Constants, Variables and Data types: Introduction - Constants - Variables – Data types – Declaration of variables – Giving values to Variables - Scope of Variables – Symbolic Constants – Type Casting - Getting values of variables- standard default values

Unit II

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

Decision Making and Branching: Introduction- Decision Making with if statement – simple if Statement – The if…else statement – Nesting of if…else Statements – The else if Ladder – The switch statement – The ?: operator.

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Decision Making and Looping: Introduction-The while statement – The do statement – The for statement – jumps in loops - Labeled loops.

Classes, Objects and Methods: Introduction - Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static Members – Nesting of methods – Inheritance : Extending a class-Overriding Methods – Final Variables and Methods – Final Classes – finalizer methods – Abstract Methods and Classes – Visibility control

Unit III

Arrays, Strings and Vectors : Introduction -One –Dimensional Arrays – creating an Array – Two dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated types

Interfaces: Multiple Inheritance: Introduction - Defining Interfaces – Extending Interfaces – implementing Interfaces – Accessing Interface Variables.

Packages: -Putting Classes Together: Introduction - Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – adding a class to a Package – Hiding Classes – Static import.

Unit IV

Multithreaded Programming : Introduction-Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread methods – Thread Exceptions – Thread priority – Synchronization – implementing the 'Runnable' Interface – Inter-thread Communication

Managing Errors and Exceptions: Introduction- Types of Errors – Exceptions – Syntax of Exception Handling code – Multiple Catch Statements – Using Finally statement – Throwing our own Exceptions – Using Exceptions for debugging

Applet Programming : Introduction- How applets differ from Applications – Preparing to write Applets – Building Applet code – Applet life Cycle – Creating an executable Applet – Designing a Webpage – Applet Tag – adding Applet to HTML file – Running the Applet

Unit V

Graphics Programming: Introduction-The Graphics Class – Lines and Rectangles – Circles and Ellipses, Drawing Arcs- Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar charts.

Managing Input / Output Files in Java: Introduction-Concept of Streams – Stream Classes – Byte Stream Classes – Character Stream Classes – Using Streams – other useful I/O classes-using the file class –Input / Output Exceptions- Creation of Files – Reading / Writing characters – Reading / Writing Bytes – Handling Primitive Data Types – Concatenating and Buffering Files – Random Access Files – Interactive Input and Output

Text Book

Programming with Java, E.Balagurusamy, A Primer, 4th Edition, Tata McGraw Hill
Company,   Fifth Reprint 2011.

Unit I	**: Chapters 2.1 – 2.6, 2.8, 2.9, 3.1 – 3.7, 3.9 – 3.12, 4**
Unit II	**: Chapters 5, 6, 7, 8.1 – 8.16, 8.18**
Unit III	**: Chapters 9.1 - 9.8, 10, 11**
Unit IV	**: Chapters 12, 13, 14.1-14.10**
Unit V	**: Chapters 15.1-15.9, 16.1-16.16**

Reference Book

1.   Java and Object-Oriented Programming Paradigm, Debasish Jana, Prentice Hall of
      India Private Limited, New Delhi, 2008.

2.   The Complete Reference Java 2, Patrick Naughton, Herbert Schildt, Tata McGraw
      Hill, fifth edition, 2006.

3.   "**Java – How to Program**", Sixth Edition 2005, **H.M. Deitel, P.J.Deitel**, Pearson
      Education Pvt. Ltd, Delhi.

CS14 : LAB 9: JAVA PROGRAMMING

(6 Hours – 4 Credits)

Section: A

Write Programs in Java for the following:

1.   To implement a simple temperature conversion program.

2.   To perform addition and subtraction of complex numbers using class and objects.

3.   To perform volume calculation using method overloading.

4.   Using command line arguments, test ifthe given string is palindrome or not.

5.   String manipulation using String Methods (Use of any five String methods are
      preferred).

6.   Write a program to fill names into a list .Also, copy them in reverse order into
      another list. If the name contains any numeric value throw an exception "Invalid
      Name"

7.   Program to handle any two built-in exceptions in Java.

8.   To perform multiplication of matrices using class and objects.

9.   Using multilevel inheritance prepare a student marksheet.

10.   Implement multiple inheritance for paybill preparation.

11.   Implement interface for area calculation for different shapes.

12. Create a package called "Arithmetic" that contains methods to deal with all arithmetic operators. Also write a program to use the package.

13. Create two threads such that one of the thread generate Fibonacci series and another generate perfect numbers between two given limits.

14. Define an exception called**": Marks Out of bound:"** Exception, that is thrown if the entered marks are greater than 100.

15. Program to demonstrate the use of Wrapper class methods.

16. File Processing using Byte stream.

17. File Processing using Character Stream.

18. Write applets to draw the following Shapes:

   (a). Cone **(b).**Cylinder   **(c).** Square inside a Circle **(d).** Circle inside a Square

19. Write an applet Program to design a simple calculator.

20. Write an Applet Program to animate a ball across the Screen.

CS10: OPERATING SYSTEM CONCEPTS

(4 Hours- 4 Credits)

Unit I

Introduction: What is an Operating System – Mainframe Systems –Multiprocessor Systems – Distributed Systems – Clustered Systems – Real TimeSystems.**Operating System Structures:** System components – OperatingSystem Services – System calls – System programs.

Self Study: Operating System Services**.**

Unit II

Processes: Process concepts - Process scheduling – Operations onprocess. **Threads:** Overview – Multithreading models - Threading issues. **CPUscheduling:** Basic Concepts – Scheduling criteria – scheduling algorithms –First-Come First-Served Scheduling – Shortest Job First Scheduling – PriorityScheduling – Round-Robin Scheduling.

Unit III

Process Synchronization: The Critical-section problem – Semaphores –Classic problems of synchronization. **Deadlocks:** Deadlock characterization –Deadlock prevention – Deadlock Avoidance – Deadlock Detection – Recoveryfrom Deadlock.

Unit IV

Memory Management: Contiguous memory allocation – paging – BasicConcepts – segmentation. **Virtual Memory:** Demand paging – Basic Concepts -Page replacement.

Unit V

File-System Interface: File concepts – Access methods – DirectoryStructure. **File-System Implementation**: Directory implementation – Allocationmethods – Contiguous Allocation – Linked Allocation – Indexed Allocation. **Mass-Storage Structure:** Disk Structure – Disk Scheduling – Disk Management.

Text Book

Operating System Concepts, Silberschartz.A, Galvin, Gagne, John Wiley & Sons,Sixth Edition 2007

UNIT	CHAPTERS SECTIONS
I	1, 3 1.1,1.2,1.4 – 1.7, 3.1 – 3.4
II	4, 5, 6 4.1 – 4.3, 5.1 – 5.3, 6.1 – 6.3.1, 6.3.2, 6.3.3, 6.3.4
III	7, 8 7.2, 7.4, 7.5, 8.2, 8.4 – 8.7
IV	9, 10 9.3, 9.4.1, 9.5, 10.2.1, 10.4
V	11, 12, 14 11.1 – 11.3, 12.3 - 12.4.1, 12.4.2, 12.4.3, 14.1 -14.3

Reference Books

1. Operating Systems: Internals and Design Principles, William Stallings,

Dorling Kindersley India Pvt. Ltd. 6/E, 2009.

2. Operating Systems, Davis, Pearson Education, 6th Edition.
3. Operating Systems – H.M.Deitel, Pearson Education, 2nd Edition,2005

AS4: NUMERICAL METHODS

(4 Hours – 4 Credits)

UNITI:

Algebraic and Transcendental Equations: Errors in numerical computation-Iteration method-Bisection method-Regula-Falsi method-Newton-Raphson method-Horner's method.

UNITII:

Simultaneous Equations: Introduction-Simultaneous equations-Back substitution-Gauss Elimination method-Gauss –Jordan Elimination method-Calculation of Inverse of a matrix-Crout's method-Iterative methods-Gauss-Jacobi Iteration method-Gauss seidal Iteration method-Newton Raphson's method for simultaneous equations.

UNITIII:

Interpolation&Introduction: Newton's interpolation Formulae-Central difference Interpolation formulae-Gauss forward, Gauss backward, Lagrange's interpolation formulae-Divided differences-Newton's divided difference formula-Inverse Interpolation.

UNIT IV:

Numerical Differentiation and Integration: Introduction-Derivates using Newton's forward difference formula-Derivates using Newton's backward difference formula-Numerical Integration-Newton-cotes quadrature formula-Trapezoidal Rule-Simpson's one third rule-Simpson's 3/8 th rule.

UNITV:

Numerical Solution of Ordinary Differential Equations: Introduction-Taylor series method-Picard's method-Euler's method-Runge-kutta method of second, third, fouth order-Predictor & corrector methods-Mile's method.

Text Book:

Numerical Methods, Second Edition, S.Arumugam, A.ThangapandiIssac, A.Somasundaram, SCITECH publications.

Unit I: Chapter-3

Unit II: Chapter-4 (excluding Relation method and its related problems)

Unit III: Chapter-7 (Sections: 7.0, 7.1, 7.2((i), (ii) and related problems); 7.3,7.4,7.5,7.6)

Unit IV: Chapter-8 (Sections: 8.0,8.1,8.2 related problems,8.5 (excluding Weddles rule, Booles rule, Romberg's method and related problems))

Unit V: Chapter-10 (Sections : 10.0,10.1,10.2,10.3(excluding modified Euler's method & its related problems) 10.4,10.5,10.6)

Reference Book:

Mathews J.H. Numerical Method for Maths, Science and Engineering; PHI, New Delhi, 2001.

SBS4: LAB 8 : PHP AND MYSQL

(2 Hours – 2 Credits)

Write a PHP program for the following :

1. To display three marks of five students in a table

2. To design a client page to get two numbers and add, subtract, multiply and divide then in server and display

3. To design a page to get age of a person and display he/she is eligible for vote or not in server page.

4. To design a client page to get five marks of a student and display total, Average, Grade in server page

5. To Get 'n' value in the client page and display multiplication table of n in the server page.

6. To Get two text value in client page, done string manipulation and display in server page

    (Any five functions)

7. To find Sum of digits

8. To find Biggest number using Function

9. To display Book details using Foreach Loop

10. To display registration Form

11. To Copy from one file to another file

12. To Multiples of 7 using REQUIRE

13. SELECT commands in MY-SQL

14. DML/TCL commands in MY-SQL

15. Retrieve and process Employee Pay-bill calculation using PHP & MY-SQL

16. Retrieve and process EB-Bill calculation using PHP & MY-SQL

CS11: COMPUTER NETWORKS

(5 Hours – 4 Credits)

UNIT I :

Introduction: A Brief History – Applications – Computer Networks – Categories of Networks – Standards and Standards Organizations – Network Architecture – Open Systems and OSI Model – TCP/IP Architecture.

Communication Media and Data Transmission: Fourier Analysis – Analog and Digital Data Transmission – Modulation and Demodulation – Transmission Media – Wireless Communications – Data Transmission Basics – Transmission Mode – Interfacing – Multiplexing

Error Detection and Correction: Types of Errors – Error Detection – Error Correction. **Data Link Control and Protocol Concepts:** Flow Control – Error Control – Asynchronous Protocols – Synchronous Protocols – High-Level Data Link Control (HDLC).

UNIT II :

Local Area Networks: Types of Networks and Topology –LAN Transmission Equipment – LAN Installation and Performance. **Ethernet:** IEEE Standard 802.3 **Token Bus**: IEEE Standard 802.4 **Token Ring:** IEEE Standard 802.5 – Fiber Distributed Data Interface (FDDI) – **Distributed Queue Dual Bus (DQDB):** IEEE Standard 802.6 – LAN Operating Systems and Protocols – Ethernet Technologies.

Wide Area Networks: WAN Transmission Methods – WAN Carrier Types – WAN Transmission Equipments – WAN Design and Multicast Considerations – WAN Protocols.

UNIT III:

Integrated Services and Routing Protocols: Integrating Services – ISDN Services – ISDN Topology – ISDN Protocols – Broadband ISDN – Asynchronous Transfer Mode (ATM) – Principal Characteristics of ATM – Frame Relay – Comparison of ISDN, ATM and Frame Relay.

Wireless LANS: WLAN Applications – Wireless LAN Requirements – Planning for Wireless LANs – Wireless LAN Architecture – IEEE 802.11 Protocol Layer – IEEE 802.11 Physical Layer – Designing the Wireless LAN Layout – WAP Services.

UNIT IV:

Internet Working: Principles of Internet Working – Routing Principles – Internetwork Protocols (IP) – Shortcomings of IPv4 – IP Next Generation.

TCP Reliable Transport Service: Transport Protocols – The Service TCP Provides to Applications – End –to-End Service and Datagrams – Transmission Control Protocol – User Datagram Protocol.

UNIT V:

Network Applications: Client-Server Model – Domain Name System (DNS) – Telnet – File Transfer and Remote File access – Electronic Mail – World Wide Web (WWW).

Network Management: Goal of Network Management – Network Management Standards – Network Management Model – Infrastructure for Network Management – Simple Network Management Protocol (SNMP).

Text Book:.

Computer Networks, Andrew S Tanenbaum, 4th Ed, Prentice Hall of India, 2006.

> UNIT I: Chapter - 1,2,3,5
> UNIT II: Chapter - 6, 7
> UNIT III: Chapter - 8, 9
> UNIT IV: Chapter - 10, 11
> UNIT V: Chapter – 12

Reference Books:
  1. **Data Communications and Computer Networks,**BrijendraSingh,Second Edition,PHI, 2006.
2. **Data and Computer Communications,** William Stallings, PHI, 2007.
  3. **Data Communication and Networking** ,Behrouz A. Forouzan, TMH, 2005.

CS12: SOFTWARE ENGINEERING

(5 Hours- 4 Credits)

UNIT I:

   Introduction to Software Engineering: Some Definitions – Some Size factors – Quality and Productivity Factors – Managerial Issues.

Planning a Software Project: Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

UNIT II:

Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT III:

Software Requirements Definitions: The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT IV:

Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines.

UNIT V:

Verification and Validation Techniques: Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification.

Software Maintenance: Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – Source-Code Metrics – Other Maintenance Tools and Techniques.

Text book:

Software Engineering Concepts, Richard Fairley, Tata McGrawHill Publishing Company Limited, NewDelhi,2017

        UNIT – I   : Chapters:1.1 – 1.4, 2.1-2.5

        UNIT – II   : Chapters: 3.1 - 3.4

        UNIT – III   :Chapters: 4.1 – 4.3

        UNIT – IV   : Chapters: 5.1 – 5.9

        UNIT – V   : Chapters:8.1, 8.3 – 8.7, 9.1 – 9.5

Reference books:

1. Software Engineering – K.L.James, Prentice Hall of India Pvt. Ltd., New Delhi, 2009.

2. Fundamentals of Software Engineering – Rajib Mall, Prentice Hall of India Pvt. Ltd., New Delhi, 2003.

CS8: RELATIONAL DATABASE MANAGEMENT SYSTEM

(4Hours- 4 Credits)

UNIT I:

Overview of database systems: Managing Data – A Historical Perspective – File Systems Versus a DBMS – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People Who Work with Databases.

Introduction to database design: Database Design and ER Diagrams – Entities, Attributes, and Entity Sets – Relationships and Relationship Sets – Additional Features of ER Model – Conceptual Design With the ER Model.

UNIT II:

The relational model: Introduction to the Relational Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data – Logical Database Design: ER to Relational – Introduction to Views – Destroying / Altering Tables and Views.

Relational algebra and calculus: Preliminaries – Relational Algebra: Selection and Projection – Set Operations –Renaming – Joins - Division Relational Calculus: Tuple Relational Calculus – Domain Relational Calculus

UNIT III:

SQL queries, constraints, triggers: The Form of a Basic SQL Query - UNION, INTERSECT, and EXCEPT – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and Active Databases – Designing Active Databases

UNIT IV:

Schema refinement and normal forms: Introduction to Schema Refinement – Functional Dependencies – Reasoning about FD's – Normal Forms – Properties of Decompositions – Normalization – Schema Refinement in Database Design – Other Kinds of Dependencies

UNIT V:

Overview of transaction management: The ACID Properties – Transactions and Schedules – Concurrent Execution of transactions – Lock Based Concurrency Control – Performance of Locking – Transaction Support in SQL – Introduction to Crash Recovery.

Security and authorization: Introduction to Database Security - Access Control – Discretionary Access Control – Mandatory Access Control – Security for Internet Applications – Additional Issues Related to Security.

Text book:

Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke, McGraw Hill International Edition, Third Edition, 2003.

UNIT – I   : Chapters:1.1 – 1.9, 2.1 – 2.5
UNIT – II   : Chapters:3.1 – 3.7, 4.1 – 4.3
UNIT – III   : Chapters:5.2 – 5.9
UNIT – IV   : Chapters:19.1 – 19.8
UNIT – V   : Chapters:16.1 – 16.7, 21.1 – 21.6

Reference Books:

1. Database Management Systems - Alexis Leon and Mathews Leon, Vikas Publishing, Chennai, 2002.

2. Database Management Systems- G.K. Gupta, McGraw Hill Education, 4[th]reprint 2015, Pearson Education Asia, 2001.

3. Database System Concepts – Abraham Silberschatz, Henry F.Korth, S.Sudarshan, 6th Edition, McGraw Hill, 2010.

CS14: LAB 9: RELATIONAL DATABASE MANAGEMENT SYSTEMS

(4 Hours- 3Credits)

The following concepts must be introduced to the students:

DDL Commands

• Create table, alter table, drop table

DML Commands

• Select, update, deleteand insert statements

• Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=)

• Arithmetic operators and aggregate functions (Count, Sum, Avg, Min, Max)

• Multiple table queries (join on different and same tables)

• Nested select statements

• Set manipulation using (any, in, contains, all, not in, not contains, exists, not exists, union, intersect, minus, etc.)

• Categorization using group by……..having

• Arranging using order by

I. Create a table Student-master with the following fields client_no,name, address, city, state,pincode,remarks,bal_due with suitable data types.

    a. Create another table supplier_table from client_master. Select all the fields and rename client_no with supplier_no and name with supplier_name.
    b. Insert data into client_master
    c. Insert data into supplier_master from client_master.
    d. Delete the selected row in the client_master.

II. Create a table sales_order with s_order_no and product_no as primary key. Set other fields to store client number, delivery address, delivery date,order status.

   a. Add a new column for storing salesman number using ALTER Command.
   b. Set the s_order_no as foregin key as column constraints.
   c. Set the s_order_no as foreign key as table constraints.
   d. Enforce the integrity rules using CHECK.

III.Create a table student_master with the following fields name, regno, dept and year with suitable data types. Use Select command to do the following.

   a. Select the student's name column.
   b. Eliminate the duplicate entry in table.
   c. Sort the table in alphabetical order.
   d. Select all the Students of a particular department.

IV. Create a table sales_order_details with the s_order_no as primary key and with the following fields: product_no, description, qty_ordered, qty_disp,product_rate, profit_percent, sell_price, supplier_name.

   a. Select each row and compute sell_price*.50 and sell_price*1.50 for each row selected.
   b. Select product_no, profit_percent, Sell_price where profit_per is not between 10 and 20 both inclusive.
   c. Select product_no, description, profit_percent, sell_price where profit_percent is not between 20 and 30.
   d. Select the suppliername and product_no where suppliername has 'r' or 'h'as second character.

V. Create and use the following database schema to answer the given queries

EMPLOYEE			
DEFAULT			
Field	Type	Null	Key
Eno	Char(3)	No	Primary
Ename	Varchar(50)	No	
Job_type	Varchar(50)	No	
Manager	Char(3)	Yes	Foreign
Hiredate	Date	No	
Dno	Integer	Yes	Foreign
Commission	Decimal(10,2)	Yes	
Salary	Decimal(7,2)	No	

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DEPARTMENT			
DEFAULT			
Field	Type	Null	Key
Dno	Integer	No	Primary
Dname	Varchar(50)	Yes	

Perform the following queries:

a. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.
b. Query to display unique Jobs from the Employee Table.
c. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.
d. Query to display Employee Name and Department Number for the Employee No= 7900.
e. Query to display Employee Name and Salary for all employees whose salary is not in the range of $1500 and $2850.
f. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.
g. Query to display Name and Hire Date of every Employee who was hired in 1981.
h. Query to display Name and Job of all employees who don't have a current Manager.
i. Query to display the Name, Salary and Commission for all the employees who earn commission.
j. Sort the data in descending order of Salary and Commission.
k. Query to display Name of all the employees where the third letter of their name is _A'.
l. Query to display Name of all employees either have two _R's or have two _A's in their name and are either in Dept No = 30 or their Manger's Employee No = 7788.
m. Query to display Name, Salary and Commission for all employees whose Commission
n. Amount is 14 greater than their Salary increased by 5%.
o. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.
p. Query to display Name and calculate the number of months between today and the date each employee was hired.
q. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a _T'.

VI. Create a table master_book to contain the information of magazine code, magazine nameand publisher. Weekly/biweekly/monthly, price. Write PL/SQL block to perform insert, update and delete operations on the above table.

VII. Create a table to contain phone number, user name, address of the phone user. Write a function to search for a address using phone numbers.

VIII. Create a table to store the salary details of the employees in a company. Declare the Cursor to contain employee number, employee name and net salary. Use Cursor to update the employee salaries.

IX. Create a table to contain the information about the voters in a particular constituency. Write a proper trigger to update or delete a row in the table.

X. Create a table to store the details of the alumnus in an institution. Write a PL/SQL block to change address of particular alumni. Write proper exceptions and appropriate error messages.

ES1. 1:MOBILE COMPUTING

(5 Hours – 4 Credits)

UNIT I:

INTRODUCTION : Mobile Computing – Mobile Computing Vs wireless Networking – Mobile Computing Applications – Characteristics of Mobile computing – Structure of Mobile Computing Application. MAC Protocols – Wireless MAC Issues – Fixed Assignment Schemes – Random Assignment Schemes – Reservation Based Schemes.

UNIT II:

MOBILE INTERNET PROTOCOL AND TRANSPORT LAYER: Overview of Mobile IP – Features of Mobile IP – Key Mechanism in Mobile IP – route Optimization. Overview of TCP/IP – Architecture of TCP/IP- Adaptation of tCP Window – Improvement in TCP Performance.

UNIT III:

MOBILE TELECOMMUNICATION SYSTEM : Global System for Mobile Communication (GSM) – General Packet Radio Service (GPRS) – Universal Mobile Telecommunication System (UMTS).

UNIT IV :

MOBILE AD-HOC NETWORKS: Ad-Hoc Basic Concepts – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols – Popular Routing Protocols – Vehicular Ad Hoc networks (VANET) – MANET Vs VANET – Security.

UNIT V:

MOBILE PLATFORMS AND APPLICATIONS : Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: iOS, Android, BlackBerry, Windows Phone – M- Commerce – Structure – Pros & Cons – Mobile Payment System – Security Issues.

Text book:

Fundamentals of Mobile Computing - Prasant Kumar Pattnaik, Rajib Mall, PHI Learning Pvt. Ltd, New Delhi – 2012.

Unit I: Chapters 2.5 – 2.5, 3.1 - 3.6

Unit II :Chapters 4.3 – 4.6 , 5.1,5,3,5,7,5.8

Unit III: Chapters 2.7 – 2.9

Unit IV: Chapters 7.1 – 7.9

Unit V: Chapters 9.2 - 9.4, 11.1 – 11.6

Reference Books:

1. Mobile Communications, Jochen H. Schller, Second Edition, Pearson Education, New Delhi, 2007.

2. Introduction to Wireless and Mobile systems, Dharma PrakashAgarval, Qing and An Zeng, Thomson Asia Pvt Ltd, 2005.

3. Principles ofMobile Computing, UweHansmann, LotharMerk, Martin S. Nicklons and Thomas Stober, Springer, 2003.

ES1. 2: SOFTWARE TESTING

(5 Hours – 4 Credits)

UNIT I:

SETTING THE CONTEXT: Principles of Testing – Software Development Life Cycle

Models: Phases of Software Project – Quality, QualityAssurance, and Quality Control – Life cycle models.**TYPES OF TESTIING:** White Box testing – Black Box Testing.

UNIT II:

SOME MORE TYPES OF TESTING: Integration Testing – System and Acceptance

Testing. Performance Testing – Regression Testing.

UNIT III:

SPECIALIZED TESTING: Testing of Object-Oriented Systems – Usability and

Accessibility .

UNIT IV:

PEOPLE AND ORGANIZATIONAL ISSUES IN TESTING: Common people issues –

Organization for Testing Teams.

UNIT V:

TEST MANAGEMENT AND AUTOMATION: Test planning, Execution and Reporting

– Software Test Automation - Test Metrics and Measurements.

Text Book:

Software Testing – Principles and Practices SrinivasanDesikan and GopalaswamyRamesh,Pearson Education, 2012.
Unit I: Chapter 1,2,3,4
Unit II: Chapter 5,6,7,8
Unit III: Chapter 11,12
Unit IV: Chapter 13,14
Unit V: Chapter 15,16,17

Reference Books:
1. 1.Effective Methods of Software Testing, William Perry, Third Edition,Wiley Publishing 2007.
2. 2. Software Testing Principles and Practices ,NareshChauhan, Oxford University Press , New Delhi , 2010.1995.

ES 1.3 : BIOMETRICS

(5 Hours – 4 Credits)

UNIT – I

Biometric Fundamentals:

 Benefits of biometrics versus Traditional: Authentication Methods-Benefits of biometrics in Identification System - Conclusion. Key Biometric Terms and Processes - Definitions - Verification and Identification -Logical versus Physical Access - How biometric matching works Conclusion. Accuracy in Biometrics Systems: False Match Rate - False NonMatch Rate - Failure- to - Enroll (FTE) Rate-Derived metrics - Conclusion.

UNIT-II

Leading Biometric Technologies:

Finger Scan :   Components-How Finger Scan Technology Works-Competing Finger Scan Technologies – Finger Scan Deployments - Finger Scan Strengths - Finger Scan weaknesses - Conclusion. Facial Scan: How Facial Scan Technology Works - Competing Facial Scan Technologies - Facial Scan Deployments - Facial Scan Strengths – Facial Scan weaknesses -Conclusion.

UNIT-III

Iris Scan: Components - How it Works - Deployments- Iris Scan Strengths - Iris Scan Weaknesses - Conclusion. Voice Scan : Components - How It Works - Deployments -Voice Scan Strengths -Voice Scan Weaknesses - Conclusion.

UNIT-IV

Other Physiological Biometrics :Hand Scan - Retina Scan - Automated Fingerprint Identification Systems (AFIS). Other Leading Behavioral Biometrics : Signature Scan - Keystroke Scan.

UNIT-V

Biometric Applications and Markets:

Citizen-Facing Applications: Criminal Identification -Citizen Identification - Surveillance. Employee-Facing Applications : PC/Network Access - Physical Access/Time and Attendance. Customer-Facing Applications : E-Commerce / Telephony -Retail/ATM/Point of Sale. Biometric Vertical Markets : Five Primary Biometric Vertical Markets - Law Enforcement - Government Sector -Financial Sector - Healthcare -Travel and Immigration - Additional Biometric Verticals.

Text Book:

Biometrics, Samir Nanavati, Michael Thieme, Raj Nananvati, Wiley Publication, 2002.
UNIT – I: Chapters 1, 2, 3
UNIT – II: Chapters 4,5
UNIT – III: Chapters 6,7
UNIT – IV: Chapters 8,9
UNIT – V: Chapters 11,12,13,14

Reference Book:

Biometrics – John. D. Woodwards, Jr. Nicholas Orlans, Peter T. Higgins

SBS5: LAB 10: NETWORKING
(2 Hours – 2 Credits)
1. Get detailed IP address of a system
2. Send data from client to server using UDP
3. Send data from client to server using TCP
4. Use Threads to receive multiple connections for a single server socket
5. Send a file from server to multiple clients
6. Create a Chat room using TCP and UDP
7. Using RMI do mathematical operations by sending data from client to server
8. Using RMI do banking transaction between client and server
9. Using RMI prepare EB bill
10. Using RMI do payroll processing
11. Using RMI perform inventory processing

12. Router Configuration using CISCO Packet Tracer
      A. Static Routing
      B. Dynamic Routing
      C. Link State Routing Protocols

CS15: ANDROID PROGRAMMING

(5 Hours – 4 Credits)

UNIT I:

Hello Android: A little background – What Android Isn't -Android: An open Platform for Mobile Development –Native Android Applications –Android SDK Features – Introducing the Open Handset Alliance –What does Android run on? –Why develop for Mobile? –Why develop for Android? –Introducing the Development Framework. **Getting Started:**Developing for Android –Developing for Mobile and EmbeddedDevices –Android Development Tools. **Creating Applications and Activities:**What Makes an Android Application? –Introducing the Application Manifest File –Using the Manifest Editor – Externalizing Resources –The Android Application Lifecycle –Introducing the Android Application Class –A closer Look at Android Activities.

UNIT II:

Building User Interfaces: Fundamental Android UI Design –Android User Interface Fundamentals –Introducing Layouts –Introducing Fragments –Creating New Views – Introducing Adapters.**Intents and Broadcast Receivers:** Introducing Intents –Creating Intent Filters and Broadcast Receivers. **Using Internet Resources:**Downloading and Parsing Internet Resources –Using the Download Manager.

UNIT III:

Expanding the User experience: Introducing the Action Bar –Creating and Using Menus and Action Bar Action Items –Introducing Dialogs –Introducing Notifications**Advanced User Experience:**Working with Animations –Enhancing your views.

UNIT IV:

Invading the home screen: Introducing Home Screen Widgets –Creating App Widgets – Creating Live Wallpaper**Audio, Video, and Using the Camera:** Playing Audio and Video –Using the camera for Tasking Pictures –Recording Video.

UNIT V:

Databases and Content Providers: Introducing Android Databases –Introducing SQLite – Content Values and Cursors –Working with SQLite Databases –Creating Content Providers –Using Content Providers.**Maps, Geocoding, and Location-Based services:**Using Location-Based Services –Using the Emulator with Location-Based Services –Selecting a Location Provider –Finding your Current Location. **Monetizing, Promoting, and distributing Applications:** Signing and Publishing Applications –Distributing Applications.

Text book:

Professional Android 4 Application Development, RetoMeier,Wiley India Pvt Ltd., 2012.

UNIT I: Chapter 1,2,3

UNIT II: Chapter 4,5,6

UNIT III: Chapter 10,11

UNIT IV: Chapter 14,15

UNIT V: Chapter 8,13,19

Reference book:

1. The Busy coders Guide to Android Development, Mark.L.Murphy, Commonsware LLC, 2016.
2. Android Apps for Absolute Beginners – Wallace Jackson, Apress Publishing, 2014.

CS16: LAB 11: Android Programming

(6 Hours – 4 Credits)

1.Create "Hello World" application. That will display "Hello World" in the middle of the screen in the emulator. Also display "Hello World" in the middle of the screen in the Android Phone.

2. Create an application with login module. (Check username and password).

3. Create spinner with strings taken from resource folder (res >> value folder) and on changing the spinner value, Image will change.

4. Create a menu with 5 options and and selected option should appear in text box.

5. Create a list of all courses in your college and on selecting a particular course teacher-incharge of that course should appear at the bottom of the screen.

6. Create an application with three option buttons, on selecting a button colour of the screen will   change.

7. Create and Login application as above. On successful login, pop up the message.

8. Create an application to Create, Insert, update, Delete and retrieve operation on the database.

9. Add two Edit Text. When a number is entered in Edit Text 1, the square of that number should be displayed in Edit Text 2.

10. Add an Edit Text and a button. When the button is clicked, the text inputted in Edit Text should be retrieved and displayed back to the user.

11. Add two Edit Text and a button. When the button is clicked, the text inputted in Edit Text 1 should be retrieved and displayed in EditText2.

12. Program a calculator

13. Create a Module convertor for height

14. Create a Module convertor for height and weight in the same application. Selection of height/weight can be done using a spinner.

15. Create a camera application, where you can click a picture and then save it as the wallpaper.

16. Create a media player which plays an mp3 song.

17. Create a media recorder which will record the sound.

CS 17: COMPUTER GRAPHICS

(5 Hours – 4 Credits)

UNIT I:

A survey of computer graphics: Computer-Aided Design - Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces. **Overview of Graphics Systems:** Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices.

UNIT II:

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Ellipse Generating Algorithms – Filled Area primitives.

UNIT III:

Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions – Antialiasing.

UNIT IV:

Two–Dimensional Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems.

UNIT V:

Two –Dimensional Viewing : The Viewing Pipeline – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

Text Book:

Computer Graphics, Donald Hearn and M. Pauline Baker, Pearson Education. Ltd., New Delhi, Second Edition, 2008.

UNIT – I   : Chapters 1.1 – 1.8, 2. 1-2.3, 2.5, 2.6
UNIT – II   : Chapters 3.1, 3.2, 3.5-3.7, 3.11
UNIT – III   : Chapters 4.1 – 4.8
UNIT – IV   : Chapters 5.1 – 5.5
UNIT – V   : Chapters 6.1 – 6.11

Reference Books:

1. Computer Graphics, Multimedia and Animation – Malay K. Pakhira, Prentice Hall Of India Pvt. Ltd. , New Delhi – 2008

2. Fundamentals Of Computer Graphics And Multimedia – D. P. Mukherjee, Prentice Hall Of India Pvt. Ltd. , New Delhi – 1999

ES2. 1: ARTIFICIAL INTELLIGENCE

(5Hours – 4 Credits)

UNIT I:

What is Artificial Intelligence? – AI problems – The Underlying Assumption -What is an AI Technique? – Level of the Model – Criteria for Success. Problems, Problems Spaces and Search: Definition – Production Systems – Problem Characteristics – Production System characteristics – Issues in the Design of Search problems. Heuristic Search Techniques: Generate and test – Hill Climbing- Best first search- Problem Reduction –Constraint satisfaction-Means ends Analysis.

UNIT II:

Knowledge Representation issues: Representation and mappings – Approaches-Issues-Frame problem. Using Predicate Logic: Representing Simple facts in Logic -Representing Instance and ISA Relationships – Computable functions and predicates-Resolution – Natural Deduction. Representing knowledge using Rules: Procedural versus Declarative knowledge – Logic programming – Forward versus Backward Reasoning – Matching – Control Knowledge.

UNIT III:

Statistical Reasoning: Probability and Bayes Theorem – Certainty factors and Rule based systems – Bayesian Networks – Dempster Shafer theory – fuzzy logic. Weal Slot and Filler Structures: Semantic Nets – Frames. Strong and Slot andFiller Structures: Conceptual Dependency – Scripts – CYC.

UNIT IV:

Natural language Processing: Syntactic processing – semantic analysis- Discouse and pragmatic Processing – Statistical Natural language Processing. Parallel and Distributed AI: Psychological Modeling – parallelism in reasoning systems- distributed reasoning systems.

UNIT V:

Expert Systems: Representing and using Domain knowledge – Expert system shells – Explanation – Knowledge acquisition. Fuzzy logic systems : Introduction – Crisp sets – fuzzy sets – Fuzzy terminology – fuzzy logic control – sugeno style – fuzzy hedges – Alpha Cut Threshold – Neuro fuzzy systems. Prolog – The natural language of AI: Introduction – goals – Prolog terminology – variables – control structures- Arithmetic operators- Backtracking Cuts- recursion – list – dynamic databases- Input/ output and streams.

Text book:

Artificial Intelligence, Elaine Rich, Kevin Knight, Shiva Shankar B.Nair, Tata MC Graw Hill Education Pvt Ltd, Third Edition, 2009.

UNIT I: Chapter 1,2,3
UNIT II: Chapter 4,5,6
UNIT III: Chapter 8,9,10
UNIT IV: Chapter 15,16
UNIT V: Chapter 20,22,25

Reference book:

1. Artificial Intelligence: The Basics,Kevin Warwick,Routledge Taylor & Francis group , 2012.

2. Artificial Intelligence,BlayWhitby, The Rosen Publishing Group, 2009.

3. Artificial Intelligence 3e: A Modern Approach,Russell,PeterNorvig,PearsonPvt Ltd,2015.

ES2.2: COMPILER DESIGN
(5Hours – 4 Credits)

UNIT I :

Introduction to Compliers: Compliers and Translator – Need of Translator – The structure of a Complier – Lexical analysis – Syntax analysis – Intermediate code generation – optimization – code generation – Complier – writing tools. Finite automata and lexical Analysis: The role of the lexical analysis – A simple approach to the design of lexical analyzers- Regular expressions to finite automata – Minimizing the number of states of a DFA.

UNIT II :

The Syntactic specification of programming languages: context free grammars – derivations and parse trees – capabilities of context free grammars. Basic parsing techniques: Parsers – shift – reduce parsing – operator – precedence parsing – top down parsing – predictive parsers.

UNIT III:

Syntax – directed translation: syntax – directed translation schemes – implementation of syntax – directed translators – intermediate code – postfix notation – parse trees and syntax trees – 3 address code – quadruples and triples – translation of assignment statements – Boolean expressions – statements that alter the flow of control. Symbol tables: the contents of a symbol table – data structures for symbol table – representing scope information.

UNIT IV:

Run time storage administration: Implementation of a simple stack allocation scheme – implementation of block-structured languages – storage allocation in block structured languages. Error deduction and recovery: errors – lexical phase errors – syntactic phase errors – semantic errors.

UNIT V:

Introduction of code optimization: The principle sources of optimization – loop optimization – the DAG representation of basic blocks – value numbers and algebraic laws – Global data flow analysis. Code generation: Object programs – problems in code generation – a machine model – a simple code generator – register allocation and assignment – code generation from DAG's – peepholes optimization.

Text Book

Principles of Complier Design,AlfredV.Aho, Jeffrey D.Ullman , Narosa Publishing House.25th Reprint, 2001.

> Unit I : Chapters 1.1 – 1.11, 3.1 – 3.6
> Unit II: Chapters 4 & 5
> Unit III: Chapters 7.1 – 7.9 , & 9
> Unit IV: Chapters 10(excluding 10.3) & 11
> Unit V: 12 & 15

Reference Book

1.Compiler Principles, Techniques and Tools by Alfred V.Aho, Monica S.Lam, Ravi Sethi, Jeffrey D. Ullman, Second edition, Pearson Publications, 2007.

2.Complier Design, Dr. R. Venkatesh, Dr. N.UmaMaheswari, Ms.S.Jeyanthi, Yes Dee Publishing Pvt Ltd,2015.

3.Complier Design, S.GodfreyWinster, S.Aruna Devi, R.Sujatha, Yes Dee Publishing Pvt Ltd,2018.

ES2: 3. PYTHON PROGRAMMING

(5Hours – 4 Credits)

UNIT I:

Why do people use Python? – What can I do with Python? – What are Python's Technical Strengths? - How Python runs programs: Introduction – Program execution – Execution model variations.

Unit II

Types and operations : Python's core data types – Numbers – Strings – Lists –Dictionary – Tuples – Files. Numeric Types : Numeric type basics – Numbers in action – Other Numeric Types- String fundamentals : String basics – string literals – strings in action – string methods – string formatting expressions – string Formatting method calls.

Unit III

Introducing python statements –Assignment statements – Expression statements – Print operations – If statements – Python syntax revisted – truth values and Boolean values – If/else ternary expression.

Unit IV

While Loops – Break, continue, pass and the loop else –For loops – Loop coding techniques- Function basics : coding functions – first example – second example.

Unit V

Scopes : Python scope basics – global statement –scopes and nested functions. Arguments : Argument passing basic- Special argument matching modes-Recursive functions.

Text Book

Learning Python, Mark Lutz, O'REILLY, Fifth edition,2013
Unit I   : Chapters 1,3
Unit II   : Chapters 4,5,7
Unit III   : Chapters 10, 11, 12
Unit IV   : Chapters 13,16
Unit V   : Chapter 17,18.19

Reference Books

Core Python programming, Dr.R.NageswaraRao ,Dreamtech press,2017

1. Beginning Python: From Novice to Professional , Magnus Lie Hetland ,Apress , second edition,2009
2. Introducing Python, Lubanovic Bill, Shroff Publishers & Distributers Private Limited, 2014.

SBS6: QUANTITATIVE APTITUDE

(2 Hours -2 Credits)

UNIT I:

Numbers-HCF & LCM of numbers – Decimal Fractions.

UNIT II :

Square roots & Cube roots- Average – Problems on Numbers – Problems on Ages.

UNIT III:

Percentage – Profit & Loss – Ratio & Proportion.

UNIT IV:

Time & Work – Time & Distance.

UNIT V:

Simple Interest – Compound Interest – Area –Volume & Surface areas.

Text Book

Quantitative Aptitude, R.S.Aggarwal,S.Chand& Company Ltd.,2011

Unit I   : Page nos.3-29, 30-45, 46-66.

Unit II : Page nos.117-138,139-160,161-181,182-194

Unit III : Page nos.208-250,251-293,294-310

Unit IV : Page nos. 341-370,384-404

Unit V : Page nos.445-465,466-486, 499-548,549-587

Reference Books:

1. Quantitative Aptitude and reasoning, R.V. Praveen, PHI Learning, 2nd Edition 2013.
2. Magical book on Quicker Maths, M.Tyra, BSC Publishing Co. Pvt.Ltd, Delhi. Reprint, 2011.
3. Quantitative Aptitude for Competitive Exams, AbhijitGuha, 4th Edition, Tata McGraw Hill Company, New Delhi.