

**ANNEXURE 16UIT**  
**GTN ARTS COLLEGE (Autonomous)**  
**DINDIGUL-625 005**  
**(Accredited with 'B' Grade by NAAC)**  
**CHOICE BASED CREDIT SYSTEM**  
**B.Sc INFORMATION TECHNOLOGY (SEMESTER) (SELF FINANCE)**  
**REGULATIONS AND SYLLABUS**  
**(WITH EFFECT FROM ACADEMIC YEAR 2016-2017).**

**Program Title** : B.Sc Information Technology (Semester)

**No of Years of Program** : Three years

**Qualifications for Admission** :

Candidate should have passed the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Govt of TamilNadu or any other Examinations accepted by the syndicate as equivalent thereto with Mathematics as one of the subjects.

**Medium of Instruction** : English

**General Objectives** :

To make the students to understand the basic knowledge in the field of Information Technology.

**Course Structure**

|            |  |
|------------|--|
| Part – I   | : Tamil  |
| Part – II  | : English  |
| Part – III | : Core 15 Papers<br>Allied 4 Papers<br>Elective 2 Papers     |
| Part – IV  | : Non Major Elective 2 Papers<br>Skill Based Course 6 Papers |

## Question Paper Pattern

The Internal and External marks should be allotted as 25 : 75. The question paper will have three parts.

### Section – A (10\*1=10 marks)

Question No.1 to 10 (it can be true or false, fill in the blanks and multiple choices).

### Section – B (5\*7=35 marks)

Answer all question choosing either (a) or (b) (question no 11 to 15) one question from each unit. Answers not to exceed two pages.

### Section – C (3\*10=30 marks)

Answer any three out of five (one question from each unit) (question 16 – 20) Answer not to exceed four pages.

1. The pattern for internal valuation may be : two tests – 15 marks each : average Marks.
2. Group Discussion / seminar / quiz – 5 marks.
3. 2 Assignments: 5 marks each Average 5 marks
4. First Internal assessment will be conducted in between 30<sup>th</sup> and 40<sup>th</sup> working days. Second test will be conducted in between 70<sup>th</sup> and 80<sup>th</sup> working days.

## 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 and conduct certification from the head of the department shall be required for taking the external examinations.

(iii) The passing minimum is 40% and a candidate will be declared to have passed

(a) In I class if he / she have obtained 60% and above in the III part

(b) In II class if he / she have secured 50% and above but less than 60%

(c) In III class if he / she have secured 40% and above but less than 50%

Ranking will be made for the candidates who have successfully completed the course without any arrears in each semester with the candidates scored the maximum total in III part be put in the I Rank and the minimum total in II part be put in the last Rank.

### Course Structure

| SEMESTER           | SUBJECTS           |                    |                    |                    |                    |                            | TOTAL HOURS | TOTAL CREDITS |
|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------------|-------------|---------------|
| I                  | T1 (6)<br>[3]      | E1(6)<br>[3]       | CS1(4)<br>[4]      | CS2(6)<br>[4]      | AS1(4)<br>[4]      | NME1 (2)[2]<br>SBS1(2)[2]  | 30          | 22            |
| II                 | T2 (6)<br>[3]      | E2 (6)<br>[3]      | CS3(4)<br>[4]      | CS4(6)<br>[4]      | AS2(4)<br>[4]      | NME1(2) [2]<br>SBS2(2)[2]  | 30          | 22            |
| III                | T 3(6)<br>[3]      | E3 (6)<br>[3]      | CS5<br>(4)<br>[4]  | CS6<br>(4)<br>[3]  | CS7<br>(4)<br>[4]  | SBS3(2) [2]<br>AS3(4)[4]   | 30          | 23            |
| IV                 | T4 (6)<br>[3]      | E4 (6)<br>[3]      | CS8<br>(4)<br>[4]  | CS9<br>(4)<br>[3]  | CS10<br>(4)<br>[4] | SBS4(2) [2]<br>AS4(4)[4]   | 30          | 23            |
| V                  | CS<br>11(5)<br>[4] | CS<br>12(5)<br>[4] | CS13<br>(5)<br>[4] | CS<br>14(6)<br>[4] | ES1<br>(5) [4]     | EVS (2) [2]<br>SBS5(2) [2] | 30          | 24            |
| VI                 | CS15<br>(5)<br>[4] | CS16<br>(6)<br>[4] | CS17<br>(5) [4]    | ES2(5)<br>[4]      | ES3<br>(5) [5]     | VE(2)[2]<br>SBS6(2) [2]    | 30          | 25            |
| Extension Activity |                    |                    |                    |                    |                    |                            |             | 1             |
| TOTAL              |                    |                    |                    |                    |                    |                            |             | 140           |

( ) – Number of Hours

[ ] – Number of Credits

T - Tamil;

E - English;

CS - Core Subject;

AS - Allied Subject;

SBS - Skill Based Subject;

NME - Non Major Electives;

ES - Elective Subject;

VE - Value Education;

EVS - Environmental Studies;

EA - Extension Activity;

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**SYLLABUS**  
**(WITH EFFECT FROM ACADEMIC YEAR 2016-2017).**

| SEMESTER           | SUBJECTS      |               |               |                    |               |   | TOTAL HOURS | TOTAL CREDITS |
|--------------------|---------------|---------------|---------------|--------------------|---------------|---|-------------|---------------|
| I                  | T1 (6)<br>[3] | E1(6)<br>[3]  | CS1(4)<br>[4] | CS2(6)<br>[4]      | AS1(4)<br>[4] | NME (2)[2]<br>SBS1(2)[2]                  | 30          | 22            |
| II                 | T2 (6)<br>[3] | E2 (6)<br>[3] | CS3(4)<br>[4] | CS4(6)<br>[4]      | AS2(4)<br>[4] | NME1(2)[2]<br>SBS2(2)[2]                  | 30          | 22            |
| III                | T (6)<br>[3]  | E (6)<br>[4]  | CS (6)<br>[4] | CS (6)<br>[4]      | AS (4)<br>[5] | SBS (2)<br>[2]                            | 30          | 23            |
| IV                 | T (6)<br>[3]  | E (6)<br>[4]  | CS (6)<br>[4] | CS (6)<br>[4]      | AS (4)<br>[5] | SBS (2)<br>[2]                            | 30          | 23            |
| V                  | CS (6)<br>[4] | CS (6)<br>[4] | CS (5)<br>[4] | CS (5)<br>[4]      | ES (4)<br>[5] | EVS (2) [2]<br>SBS (2) [2]                | 30          | 25            |
| VI                 | CS (6)<br>[4] | CS (6)<br>[4] | ES (5)<br>[5] | Project<br>(5) [5] | VE (2)<br>[2] | SBS (2) [2]<br>SBS (2) [2]<br>SBS (2) [2] | 30          | 26            |
| Extension Activity |               |               |               |                    |               |   |             | 1             |
| <b>TOTAL</b>       |               |               |               |                    |               |   |             | <b>140</b>    |

**SEMESTER – I**

| S.No  | COD E | Subject Code | Subject                                | Hours | Credits | Internal Marks | External Marks |
|-------|-------|--------------|--|-------|---------|----------------|----------------|
| 1     | T1    |              | Tamil                                  | 6     | 3       | 25             | 75             |
| 2     | E1    |              | English                                | 6     | 3       | 25             | 75             |
| 3     | CS1   | 16UITC11     | Introduction to IT and HTML            | 4     | 4       | 25             | 75             |
| 4     | CS2   | 16UITCP1     | Lab 1:HTML and Office Automation       | 6     | 4       | 40             | 60             |
| 5     | AS1   |              | Mathematical Foundations               | 4     | 4       | 25             | 75             |
| 6     | SBS1  | 16UITS11     | Lab2:Linux Programming                 | 2     | 2       | 40             | 60             |
| 6     | NME1  | 16UITN11     | Introduction to Information Technology | 2     | 2       | 25             | 75             |
| TOTAL |       |              |  | 30    | 22      |                |                |

**SEMESTER – II**

| S.No  | CODE | Subject Code | Subject                        | Hours | Credits | Internal Marks | External Marks |
|-------|------|--------------|--------------------------------|-------|---------|----------------|----------------|
| 1     | T2   |              | Tamil                          | 6     | 3       | 25             | 75             |
| 2     | E2   |              | English                        | 6     | 3       | 25             | 75             |
| 3     | CS3  | 16UITC21     | Programming in C               | 4     | 4       | 25             | 75             |
| 4     | CS4  | 16UITCP2     | Lab3:Programming in C          | 6     | 4       | 40             | 60             |
| 5     | AS2  | 16UITA21     | Resource Management Techniques | 4     | 4       | 25             | 75             |
| 6     | SBS2 | 16UITS21     | Lab4:Desktop publishing        | 2     | 2       | 40             | 60             |
| 6     | NME2 | 16UITN21     | Internet and its Applications  | 2     | 2       | 25             | 75             |
| TOTAL |      |              |                                | 30    | 21      |                |                |

**SEMESTER – III**

| S.No  | CODE | Subject Code | Subject                                      | Hours | Credits | Internal Marks | External Marks |
|-------|------|--------------|--|-------|---------|----------------|----------------|
| 1     | T3   |              | Tamil  | 6     | 3       | 25             | 75             |
| 2     | E3   |              | English                                      | 6     | 3       | 25             | 75             |
| 3     | CS5  | 16UITC31     | Object Oriented Programming Using C++        | 4     | 4       | 25             | 75             |
| 4     | CS6  | 16UITCP3     | Lab 5: Programming Using C++                 | 4     | 3       | 40             | 60             |
| 5     | CS7  | 16UITC32     | Data Structures and Computer Algorithms      | 4     | 4       | 25             | 75             |
| 6     | AS3  | 16UITA31     | Digital Principles and Computer Organization | 4     | 4       | 25             | 75             |
| 7     | SBS3 | 16UITS31     | Lab 6: Multimedia                            | 2     | 2       | 40             | 60             |
| TOTAL |      |              |  | 30    | 23      |                |                |

**SEMESTER – IV**

| S.No  | CODE | Subject Code | Subject                                      | Hours | Credits | Internal Marks | External Marks |
|-------|------|--------------|--|-------|---------|----------------|----------------|
| 1     | T4   |              | Tamil  | 6     | 3       | 25             | 75             |
| 2     | E4   |              | English                                      | 6     | 3       | 25             | 75             |
| 3     | CS8  | 16UITC41     | Relational Database Management System        | 4     | 4       | 25             | 75             |
| 4     | CS9  | 16UITCP4     | Lab 7: Relational Database Management System | 4     | 3       | 40             | 60             |
| 5     | CS10 | 16UITC42     | Operating System                             | 4     | 4       | 25             | 75             |
| 6     | AS4  |              | Numerical Methods                            | 2     | 4       | 25             | 75             |
| 7     | SBS4 | 16UITS41     | Lab 8: PHP & MYSQL                           | 2     | 2       | 40             | 60             |
| 8     | EA   |              | Extension Activities                         | 2     | 1       | 100            |                |
| TOTAL |      |              |  | 30    | 24      |                |                |

**SEMESTER – V**

| <b>S.No</b>  | <b>CODE</b> | <b>Subject Code</b>              | <b>Subject</b>   | <b>Hours</b> | <b>Credits</b> | <b>Internal Marks</b> | <b>External Marks</b> |
|--------------|-------------|----------------------------------|--|--------------|----------------|-----------------------|-----------------------|
| 1            | CS11        | 16UITC51                         | Data Communication and Computer Networks                             | 5            | 4              | 25                    | 75                    |
| 2            | CS12        | 16UITC52                         | Software Engineering   | 5            | 4              | 25                    | 75                    |
| 3            | CS13        | 16UITC53                         | Java Programming   | 5            | 4              | 25                    | 75                    |
| 4            | CS14        | 16UITCP5                         | Lab 9: Java Programming  | 6            | 4              | 25                    | 75                    |
| 5            | ES1         | 16UITE51<br>16UITE52<br>16UITE53 | 1.Mobile Computing<br>2. Computer Graphics<br>3.Information Security | 5            | 4              | 25                    | 75                    |
| 6            | EVS         |                                  | Environmental Studies  | 2            | 2              | 25                    | 75                    |
| 7            | SBS5        | 16UITS51                         | Lab 10: Networking   | 2            | 2              | 40                    | 60                    |
| <b>TOTAL</b> |             |                                  |  | <b>30</b>    | <b>24</b>      |                       |                       |

**SEMESTER – VI**

| <b>S.No</b>  | <b>CODE</b> | <b>Subject Code</b>              | <b>Subject</b>   | <b>Hours</b> | <b>Credits</b> | <b>Internal Marks</b> | <b>External Marks</b> |
|--------------|-------------|----------------------------------|--|--------------|----------------|-----------------------|-----------------------|
| 1            | CS15        | 16UITC61                         | Android Programming  | 5            | 4              | 25                    | 75                    |
| 2            | CS16        | 16UITCP6                         | Lab 11:Web Programming   | 6            | 4              | 40                    | 60                    |
| 3            | CS17        | 16UITC62                         | Software Testing   | 5            | 4              | 25                    | 75                    |
| 4            | ES2         | 16UITE61<br>16UITE62<br>16UITE63 | 1.Introduction to Unified Modeling Language<br>2. Compiler Design<br>3.Cryptography and Network Security | 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                    |
| <b>TOTAL</b> |             |                                  |  | <b>30</b>    | <b>25</b>      |                       |                       |



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**Semester : I**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITC11**  
**No. Of. Credits : 4**

**Course Objective:**

- To know the overview of Computer System
- To learn about computer memory and storage devices
- To know about Telecommunications and Networks
- To know usage of HTML forms.
- To develop web base applications on simple html tags.

**CS1 : INTRODUCTION TO IT AND HTML**

**UNIT I :**

**Introduction to Computers :** Introduction – Importance of Computers – Characteristics of Computers – 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.

**UNIT II :**

**Computer Memory :** Introduction – Random Access Memory – Read Only Memory – **Secondary Storage Devices :** Introduction – Classification of Secondary Storage Devices – Magnetic Disks - Optical Disks – Magnetic Tape – Zip Disk – Jaz Disk – Super Disk – MO Disk – **Input Devices and Technologies :** Introduction – Keyboard – Mouse – Trackball – Game Controllers – Scanners – Barcode Reader – OCR – Digitizer – Voice Recognition – Web Cams – Digital Camera – Video Cameras.

### UNIT III :

**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- **Telecommunications and Networks :** Introduction – Types of Networks – Network Topology – Network Protocols – Network Architecture – Network Standardization – **Internet and WWW :** Introduction – Evolution of Internet – What can I do in the Internet? – Internet Addressing – WWW – Web Pages and HTML – Web Browsers – Searching the Web.

### UNITIV :

**Introduction to HTML :** Designing a Home Page – History of HTML – HTML Generations & Documents- Anchor Tag – Hyperlinks – **Head and Body Sections.**Header Section – Title – Prologue –Links – Coloured Web Page – Comment Lines.**Designing the Body Section :** Heading Printing – Aligning the Headings – Paragraph – Tab settings – Images and Pictures – Embedding PNG format images. **Ordered and Unordered Lists :** Lists - Unordered List – Headings in a List – Ordered List – Nested List.

### UNITV :

**Table Handling :** Tables – Table creation in HTML – Width of the table and cells- Cells Spanning Multiple Rows/Columns –Column cells- Column Specification.**Frames :**Frameset Definition - Frame Definition – Nested Framesets. A Web Page Design Project : Frameset Definition – Animals – Birds – Fish. **Form Design:** Method and Enctype Attribute – Drop Down List.

### Text Books :

1. Introduction to Information System –Alexis Leon and Mathews Leon, Mc-Graw Hill Education, Reprint 2008.  
Unit I : Chapters 2,3,4  
Unit II : Chapters 5,6,7  
Unit III : Chapters 8,9,12,13

2. World Wide Web design with HTML – C.Xavier, Tata Mc-GrawHil, 2007.

Unit IV : Chapters 4 – 7

Unit V : Chapters 8,10 – 12

**Reference Books :**

1. Introduction to Computers – Peter Norton, sixth edition, Mc-Graw Hill Companies.
2. HTML Introduction to Web Page Design and Development, David Mercer, Tata Mc-Graw Hill Publishing Company Limited.

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**Semester : I**  
**No. Of. Hrs. allotted : 6**

**Sub. Code. : 16UITCP1**  
**No. Of. Credits : 4**

**Title of the Paper: LAB 1 : HTML & OFFICE AUTOMATION**

**Program List:**

**HTML:**

1. a . Write HTML code to develop a web page having the background in red and body “My First Page “ in any other color.  
b . Create a HTML document giving details of your name, age, telephone address, roll no using align tag.  
c . Write HTML code to design a page containing a text in a paragraph give suitable heading style.  
d . Design a Page having background color given text color red and using all the attributes of font tag.
- 2 . a . Write HTML code to create a web page that contains an Image at its center.  
b .create a web page using href tag having the attribute alink, vlink.  
c . Write a HTML code to create a web page of pink color and display moving message in red color.
- 3 . a . Create a web page, showing an ordered list of name of your five friends.  
b .Create a HTML document containing a nested list showing the content page of any book.  
c . Create a web page, showing an unordered list of name of fruits.

- 4 . a . Create a table in HTML with Dummy Data Name of Train, Place, Destination, Train No, Time, Fare, Arrival, Departure.
- 5 .Write HTML code to create a web page that displays your class time table.
- 6 . a . Create a web page with Table using Frame concept.  
b . Create a web page having two frames one containing links and another with contents of the links. When link is clicked appropriate contents should be displayed on Frame2.
- 7 . Design an application form using all input types.
- 8 . Design a website of your own by using all html tags.

**MS Word:**

1. Open a word document to prepare your “RESUME” by performing the following operations.  
Formatting the text, alignment and font style.  
Page setup(margin, alignment, page height and width).
2. Create a word document to prepare an application form for college.
3. Create a student mark sheet using table, find out the total and average marks and display the result.
4. Design an invitation of your course inauguration function using different fonts, font sizes, bullets and word art/ clip art.
5. Mail Merge
  - i ) Prepare a business letter for more than one company using mail merge.
  - ii ) Prepare an invitation and to be sent to specify address in the data source.

**MS Excel :**

6. Create a suitable worksheet with necessary information and use the data sort to display the results. Also use data filters to answer at least five different criteria.

7. Create a suitable worksheet with necessary information and make out a suitable chart showing gridlines, legends and titles for axes.
8. Prepare salary bill in a worksheet showing Basic pay, DA, HRA, Gross salary, PF, /tax and Net Salary using suitable Excel functions.
9. Create, display and interact with the data using pivot charts of Excel features.

### **MS Powerpoint :**

10. Create a presentation to explain various aspects of your college using auto play.
11. Create a presentation to explain the sales performance of a company over a period of five years. Include slides covering the profile of the company, year wise sales and graph with gridlines, legends and titles for axes. Use clipart and animation features.
12. Create a presentation from various design templates.
13. Prepare a presentation using auto content wizard and your content to auto content wizard.
14. Create a presentation with the audio and video effect.

### **MS Access :**

15. Create a “Student details” table for storing marks of N students. The fields of the table are : Reg.no., name, mark1, mark2, mark3, assignment mark, seminar mark. Set the following constraints in the table.
  - i ) Set primary key in the Reg.no.field.
  - ii ) Assignment marks should be of maximum 5.
  - iii) Seminar marks should be of maximum 10.
16. Create a query for calculating total and average marks in the student table.
17. Create a “Book Details” table with fields book name, author name, price, name of the publisher, year of publication. Prepare the following queries by using this table.
  - i ) use “like” function to filter the author names beginning with the letter ‘A’.
  - ii ) List those books which are published after the year 2010.
  - iii) Make a new table with the fields author name and book name.

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Semester : I  
No. Of. Hrs. allotted : 4

Sub. Code. :  
No. Of. Credits : 4

**Title of the Paper: MATHEMATICAL FOUNDATION - I**

**Course Objective:**

- To study about the underlying concepts logical relationship functions
- To Know about Truth Table and implementation of Tautology
- To Knowing the graphical analysis and simple methods
- To Study about Matrices
- To Know about Trees

**UNIT I :**

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

**UNIT II :**

Logic – introduction – connectives – truth table – Tautology implementation and equivalence of formulae.

**UNIT III :**

Matrices: Elementary transformation – Inverse if a matrix – Rank of a matrix – Simultaneous linear equations – Cayley Hamilton theorem.

**UNIT IV:**

Graph theory: Introduction – definition and examples – degrees and subgraphs - matrices connectedness: walks, trials and paths, connectedness and components.

**UNIT V :**

Eulerian graphs – Hamiltonian graph – trees: characterization of trees, Centre of a tree.

**TEXT BOOKS:**

- 1) Modern Algebra by S. Arumugam & A. Thangapandi Issac, Scitech publications, 2005 (for Units I, III)
- 2) Discrete Mathematics by Dr.M.K. Venkaatraman, Dr.N. Sridharan, Dr.N. Chandrasekaran, National Publishing Company, 2000.(for unit II)
- 3) Invitation to Graph Theory by S.Arumugam and S.Ramachandran, Scitech Publications, 2005, Chennai. (for units IV, V)

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



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**Semester : I**  
**No. Of. Hrs. allotted : 2**

**Sub. Code. : 16UITS11**  
**No. Of. Credits : 2**

**Title of the Paper: LINUX PROGRAMMING**

**Section-A**

1. Write a Linux script (WLS) to find the number of users who have logged in.
2. WLS to see the current date, user name and current directory.
3. WLS to print the numbers 5,4,3,2,1 using While loop.
4. WLS to set the attributes of a file.
5. WLS to convert lowercase to uppercase using tr utility.
6. WLS to copy and rename a file.
7. WLS to add 5 numbers and find the average.
8. WLS to convert a decimal number to hexadecimal conversion.
9. WLS to find the factorial of a number.
10. WLS to check for palindrome.

**Section-B**

1. WLS to display "Hello World" in Bold, Blink effect and in different colors like red, green, etc.
2. WLS to display a multiplication table.
3. WLS to perform arithmetic operations using case.
4. WLS to add two real numbers.
5. WLS to display the following pattern :  
1  
  
22  
  
333  
  
4444  
  
55555
6. WLS to find the sum of digits and reversing of a given number.
7. WLS to display the student mark details.
8. WLS to prepare electricity bill.
9. WLS to sort the numbers in ascending order.
10. WLS (i) To create and append a file (ii) To compare two files.

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Sub. Code. : 16UITN11  
No. Of. Credits : 2

**Title of the Paper: INTRODUCTION TO INFORMATION TECHNOLOGY**

**Course Objective:**

- To know the basics of IT
- To be familiar with the Basics Of Computers
- To know about I/O and storage devices
- To Gain knowledge about OS and Files
- To Learn the Basics of Internet

**UNIT I :**

**Introduction to Computers :** Introduction – Importance of Computers – Characteristics of Computers – 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.

**UNIT II :**

**Central Processing Unit :** Introduction – 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 Memory(ROM).

**UNIT III :**

**Secondary Storage Devices :** Introduction – Classification of Secondary Storage Devices – Advantages of Secondary Storage - Magnetic Disks - Optical Disks – Magnetic 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 Camera – 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 :**

**Telecommunications and Networks :** Types of Networks – Network Topologies – Network Protocols – Network Architecture – Network Standardization – **Internet and WWW :** Introduction – Evolution of Internet – What can I do in the Internet? – Internet Addressing – The World Wide Web(WWW) – Web Pages and HTML – Web Browsers – Searching the Web.

#### **Text Book :**

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

Unit I : Chapters 2,3

Unit II : Chapters 4, 5

Unit III : Chapters 6,7

Unit IV : Chapters 8,9(Pg.No. 101 – 106)

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

#### **Reference Book :**

Fundamentals of Information Technology- Alexis Leon, Mathews Leon, Second Edition, Leon Vikas Pvt Ltd, Chennai.

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**B.Sc INFORMATION TECHNOLOGY (SEMESTER) (SELF FINANCE)**  
**(For those who join in 2016-2017 and after).**

**Semester : II**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITC21**  
**No. Of. Credits : 4**

**Title of the Paper: PROGRAMMING IN C**

**Course Objective:**

- To gain knowledge about Identifiers , Data types , Constants & Variables , Operators and Library Functions
- To get knowledge in use of control structures
- To study about the underlying concepts and functions
- To know about program concepts and implements-files, pointers, structure

**UNIT I:**

**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 II:**

**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 – go to statement – the while statement – do statement – the for statement – jumps in loops.

**UNIT III:**

**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 IV:**

**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 of individual members – array of structures – arrays within structures – structures within structures – structures and functions – unions – size of structures – bit fields.

## **UNIT V:**

**Pointers:** Accessing the address of variables – 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, and closing a file – IO operations on files – Error handling during IO operations command one argument.

## **Text Book:**

Programming in ANSI C, E Balagurusamy, 6<sup>th</sup> 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:** Chapter 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. Programming with C, Schaum's Outline Series, Gottfried, Tata McGraw Hill, 2006
2. Programming with ANSI and Turbo C, Ashok N.Kamthane, Pearson Education, 2006
3. H. Scheldt, C: The Complete Reference, 4<sup>th</sup> Edition, TMH Edition, 2000.
4. Kanetkar Y., Let us C, BPB Pub., New Delhi, 1999.

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**Semester : II**  
**No. Of. Hrs. allotted : 6**

**Sub. Code. : 16UITCP2**  
**No. Of. Credits : 4**

**Title of the Paper: PROGRAMMING IN C**

**Section – A**

1. Write a C Program (WCP) to find the sum of digits.
2. WCP to check whether a given number is Armstrong or not.
3. WCP to check whether a given number is Prime or not.
4. WCP to generate the Fibonacci series.
5. WCP to display the given number is Adam number or not.
6. WCP to print reverse of the given number and string.
7. WCP to find minimum and maximum of 'n' numbers using array.
8. WCP to arrange the given number in ascending order.
9. WCP to add, subtract and multiply two matrices.
10. WCP to calculate NCR and NPR.

**Section – B**

1. WCP to find the grade of a student using else if ladder.
2. WCP to implement the various string handling function.
3. WCP to create an integer file and displaying the even numbers only.
4. WCP to calculate quadratic equation using switch-case.
5. WCP to implement the various string handling function.
6. WCP to generate student mark list using array of structures.
7. WCP to create and process the student mark list using file.
8. WCP to create and process pay bill using file.
9. WCP to create and process inventory control using file.
10. WCP to create and process electricity bill using file.

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**Semester : II**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. :**  
**No. Of. Credits : 4**

**Title of the Paper: RESOURCE MANAGEMENT TECHNIQUES**

**Course Objective:**

- To understanding of operational research techniques for simulation
- To get knowledge of production scheduling and project management
- To study about queuing analysis, simulation, inventory control and decision analysis
- To gain knowledge of Methods for solving the assignment problems
- To gain knowledge of Methods for solving the transportation problem

**UNIT I:**

**Development of OR:** Definition of OR – Modeling- Characteristics and Phases – Tools, Techniques & Methods- scope of OR.

**UNIT II:**

**Linear Programming Problems:** Formulations – Slack & surplus variables – Graphical solution of LPP.

**UNIT III:**

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

**UNIT IV:**

**Duality Theorems:** (without proof) Primal dual correspondence – Duality and Simplex method – Mathematical formulation of assignment problem – Method for solving assignment problem.

## **UNIT V:**

**Mathematical formulation of Transportation Problem:** Methods for finding IBFS for the Transportation Problems.

### **Text Book:**

Operations Research, S.D. Sharma, KedarNathRamNath& Co.

**Unit I:** Chapter 1(1.1, 1.2, 1.4, 1.8, 1.9, 1.10, 1.11)

**Unit II:** 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 III:** 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 IV:** Chapter 7(7.5 (Statements only), 7.6, 7.7)

Chapter 11(11.2, 11.3, 11.4)

**Unit V:** Chapter 12(12.2 to 12.8)

### **Reference Books:**

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



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**Semester : II**

**No. Of. Hrs. allotted : 2**

**Sub. Code.**

**:16UITS21**

**No. Of. Credits**

**: 2**

**Title of the Paper: DESKTOP PUBLISHING**

1. Use Adobe PageMaker for
  - a. Creating and opening publications, use of toolbox, palettes, text and graphics, templates, saving publications – create a notice for an exhibition.
  - b. Tutorial positioning ruler guides, typing text, formatting graphics, creating columns, creating styles, changing typestyle and alignment, rotating and moving text and graphics, tabs, creating leaders, positioning and resizing logos. – create a tabulated invoice for a company.
  - c. Constructing a publication with the following features: set-up pages, edit master pages, choosing measurement system and setup ruler, alignment, layout, page numbers, rearrange pages, apply header/footer, import text, thread text blocks, balance columns, edit story, use frames and layers, lock objects, wrap text around graphics, crop graphics, assemble publications into a book, proof corrections with comment. – create a story book.
2. Using a scanner, scan an illustration, line drawing or picture, configure settings, manipulate scanned images by adjusting color, tone, contrast, brightness, resolution, shadow, make color corrections, crop scanned image and manage images in folders.

3. Use CorelDraw for

- 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, and 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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**Semester : II**  
**No. Of. Hrs. allotted : 2**

**Sub. Code. :16UITN21**  
**No. Of. Credits : 2**

**Title of the Paper: INTERNET AND ITS APPLICATIONS**

**Course Objective:**

- To gain knowledge about Internet and connections
- To learn about web browsers and browsing
- To study about Internet Protocols
- To gain knowledge of E-mails, WebPages and websites
- To gain knowledge of Social networking, Chats and forums

**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 Connections – Dedicated Lines – ISDN-DSL-Cable Modern-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 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:**

Internet & Web Technologies, Raj Kamal, TMH Pvt. Ltd., 2011.

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**Semester : III**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITC31**  
**No. Of. Credits : 4**

**Title of the Paper: OBJECT ORIENTED PROGRAMMING USING C++**

**Course Objective:**

- To gain knowledge about OOPs
- To learn about fundamental programs
- To study about inheritance concepts
- To gain knowledge virtual functions and I/O operations
- To gain knowledge of files

**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-Keywods-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-Controls 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 Function-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 Functions-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-Pointer 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:** Chapter1 (Except 1.3, 1.4),  
Chapter2 (Only 2.6).  
Chapter3 (Except 3.20,3.21,3.22),  
Chapter4
- Unit-II:** Chapter5 (Except 5.18,5.19),  
Chapter6 (Except 6.8,6.9,6.10)

|                  |                                      |
|------------------|--------------------------------------|
| <b>Unit-III:</b> | Chapter7                             |
|                  | Chapter8                             |
| <b>Unit-IV:</b>  | Chapter9                             |
|                  | Chapter10                            |
| <b>Unit-V:</b>   | Chapter11 (Except 11.8),             |
|                  | Chapter12 (Only 12.2, 12.3 and 12.4) |

### **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. Kamthare, Object Oriented Programming with ANSI & Turbo C++, Pearson Education, 2006
4. Object-Oriented Programming with C++, Poornachandra Sarang, 2<sup>nd</sup> 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.



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**Semester : III**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITCP3**  
**No. Of. Credits : 3**

**Title of the Paper: PROGRAMMING USING C++**

**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 shape using function Overloading.
4. Inline Function for Simple arithmetic Operations.
5. Demonstrating the use of Pre-defined Manipulators.
6. Demonstrating the use of Friend Function.
7. Creating Students Mark list using array and objects.
8. Demonstrating Constructors 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 Inheritances.
3. Demonstrating Multilevel Inheritances.
4. Demonstrating Hierarchical Inheritances
5. Demonstrating Virtual Function.
6. Processing Mark list Using Binary Files.
7. Count number of object in a file.
8. Demonstrating the use of command-Line arguments.

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**Semester : III**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITC32**  
**No. Of. Credits : 4**

**Title of the Paper: DATA STRUCTURES AND COMPUTER ALGORITHMS**

**Course Objective:**

- To gain knowledge about data
- To learn about fundamental of stack, queue and linked list
- To study about concepts of trees
- To gain knowledge various sorting operations and algorithms
- To gain knowledge about problems of algorithms

**Unit-I : Introduction to data structure:**

The need for data structure-Definitions-Data structures-Arrays: Introduction, range Of array-one dimensional array-two dimensional array-special types of matrices-linked list: Introduction benefits and limitations of linked list-Types-Single 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-Expressions Trees-Threaded Trees-Application of Trees.

**Unit-IV**

**Algorithms:** Introduction: What is Algorithms?-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.

### Text Books:

1. Data Structures, A. Chitra, P.T.Rajan, Vijay Nicol Imprints Pvt Ltd, McGrawHill Education of India Pvt Ltd, 2006.

**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:** Chapter 5, 6 (Except Tower of Hanoi, Dequeue)

**Unit-III:** Chapter (Except priority Queues)

2. Fundamentals of Computer Algorithms, Ellis Horowitz, SarataSahni, 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.Subramanayam, BS Publications, 2013.

3. Data Structure and Algorithms, Alfred V.Aho, John E.Hopcraft and Jeffrey D.Ullman, Pearson Education, Fourteenth Impression, 2013.

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**Semester : III**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITA31**  
**No. Of. Credits : 3**

**Title of the Paper: DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION**

**Course Objective:**

- To gain knowledge about number system
- To learn about data processing
- To study about concepts addition number system
- To gain knowledge various micro programmed controls
- To gain knowledge about CPU

**Unit-I**

**Number System and Code:** Binary numbers 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**

**Combinational Logic Circuits:** Boolean Law and theorems – sum of product method – Truth tables to Karnaugh Map – Pairs Quads, Octets – Don't care Conditions – product of sum method – product of sum simplifications.

**Data Processing Circuits:** Multiplexers – Demultiplexers – 1-of-16- Decoders BCD-to-Decimal Decoders – Seven segment decoders – Encoders – Exclusive-OR gates – parity generators and checkers.

## Unit-III

**Arithmetic Circuits:** Binary Addition – Binary Subtraction – 2's & 1's complement representation-2's Complement Arithmetic – Arithmetic building blocks.

## 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- symbolic micro-program-binary micro-program.

## Unit-V

**Central Processing Unit:** General registers 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 Books:

1. Digital Principles and Applications- Donald P.Leach, Albert Paul Malvino,Goutam Saha, 8<sup>th</sup> edition, McGraw-Hill Education, 3<sup>rd</sup> Reprint 2015.
2. Computer System Architecture, M.Morris Mano, Pearson Education, 3<sup>rd</sup> edition, 2007

**Unit- I:**5: (5.1 to 5.9) and 2: (2.1 to 2.3) Text Book1

**Unit-II:** 3: (3.1 to 3.8) and 4: (4.1 to 4.7) Text Book1

**Unit-III:** 6: (6.1 to 6.8) Text Book1

**Unit-IV:** 5: (5.1 to 5.5) and 7: (7.1 to 7.3) Text Book2

**Unit-V:** 8: (8.1 to 8.8), 9(9.1 to 9.2), 11(11.1 to 11.5) and 12(12.1 to 12.3)

### **Reference Books:**

1. Digital design, R.Anantha Natarajan, PHI Learning, 2015.
2. Principle of Digital Electronics, K.Meena, PHI Learning, 2013.
3. Digital Computer Fundamentals, Thomas C. Bartee TMH 2007.
4. Digital Circuits and Design, S. Salivahanan and S. Arivazhagan, Vikas Publishers, 2005.
5. Computer Organization and Architecture, V.Rjaraman and T.Radhakrishnan, PHI Learning, 5<sup>th</sup> Print, 2015.
6. Computer Organization, Carl Hamacher Zvonko Vranesic Safwat Zaky, McGraw Hill Education, 5<sup>th</sup> Edition, 11<sup>th</sup> reprint, 2015.
7. Computer Organization and Architecture, Smruti Ranjan Sarangi, McGraw Hill Education.

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|                                  |                              |
|----------------------------------|------------------------------|
| <b>Semester : III</b>            | <b>Sub. Code. : 16UITS31</b> |
| <b>No. Of. Hrs. allotted : 2</b> | <b>No. Of. Credits : 2</b>   |

**Title of the Paper: MULTIMEDIA**

**Photoshop**

1. Basic tools used in Photoshop.
2. Design an image by cutting the objects from 3 files and organize them in a single file and apply feather effects.
3. Design an image by applying Mirror effect.
4. Design an image by extracting flower only from given photographic image.
5. Design an image by applying Text and Transform Tools.
6. Design an image by using patch or healing brush tool to remove damaged parts of an image.
7. Design an image by applying Color Balance to change the color of an image.
8. Design an image by using Clone Stamp Tool, Smudge Tool.
9. Design an image by applying Blur Filter.
10. Design an image by applying Lighting effect Filter.
11. Design an image by applying Blending options to make a text effect.
12. Design an image by applying rainbow effect.
13. Design an image by applying text masking effect.
14. Design a college id card using any tools.
15. Design a banner for your college with images and text.



## **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.

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**Semester : IV**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITC41**  
**No. Of. Credits : 4**

**Title of the Paper: RELATIONAL DATABASE MANAGEMENT SYSTEM**

**Course Objective:**

- To gain knowledge about data files
- To learn about fundamental relational models in database
- To study about concepts of triggers
- To gain knowledge for normal forms
- To gain knowledge of transaction management

**Unit-I**

**Overview of Database System:** Managing Data- A Historical Perspective- File System 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 worldwide Database.**

**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 Data base 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.

|                  |                                |
|------------------|--------------------------------|
| <b>Unit-I:</b>   | Chapters: 1.1-1.9, 2.1-2.5     |
| <b>Unit-II:</b>  | Chapters: 3.1-3.7, 4.1-4.3     |
| <b>Unit-III:</b> | Chapters: 5.2-5.9              |
| <b>Unit-IV:</b>  | Chapters: 19.1-19.8            |
| <b>Unit-V :</b>  | 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<sup>th</sup> reprint 2015, Pearson Education Asia, 2001.
3. Database System Concepts-Abraham Silberschatz, Henry F.Korth, S.Sudarshan, 6<sup>th</sup> Edition, McGraw Hill, 2010.
4. Database Management Systems-R.Pannerselvam, 2<sup>nd</sup> Edition, PHI Learning, 2015.
5. Database System Models, Languages, Design and Application Programming R.Elmasri and S.B.Navathe, 6<sup>th</sup> Edition, Pearson Education, 2013.
6. Tech Yourself SQL in 21 days-Ryan K.Stephens, Ronald PlewBryan Morgan and Jeff Perkins, 2<sup>nd</sup> Edition, SAMS Publishing.

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**Semester : IV**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITCP4**  
**No. Of. Credits : 3**

**Title of the Paper: RELATIONAL DATABASE MANAGEMENT SYSTEM**

The Following Concepts must be introduced to the Students:

**DDL Commands**

- Create table, alter table, drop table

**DML Commands**

- Select, Update, Delete and 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 Selection 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 foreign 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 scheme to answer the given queries.

| <b>EMPLOYEE</b> |               |             |            |
|-----------------|---------------|-------------|------------|
| <b>DEFAULT</b>  |               |             |            |
| <b>Field</b>    | <b>Type</b>   | <b>Null</b> | <b>Key</b> |
| 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          |            |

| 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 the Employee Name concatenated by a Job separated by a comma.
- d. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE\_OUTPUT.
- e. Query to display the Employee Name and Salary of all the employees earning more than \$2850.
- f. Query to display the Employee Name and Department Number for the Employee No=7900.
- g. Query to display Employee Name and Salary for all employees whose salary is not in the range of \$1500 and \$2850.
- h. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.
- i. Query to display Name and Hire Date of every Employee who was hired in 1981.
- j. Query to display Name and Job of all employees who don't have a current Manager.
- k. Query to display the Name, Salary and Commission for all the employees who earn commission.
- l. Sort the data in descending order of Salary and commission.
- m. Query to display Name of all the employees where the third letter of their name is '\_A'.
- n. 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 Manager's Employee No=7788.
- o. Query to display Name, Hire Date and Salary and Commission for all employees whose Commission Amount is 14 greater than their Salary increased by 5%.
- p. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.
- q. Query to display Name and Calculate the number of months between today and the date each employee was hired.
- r. Query to display Name with the 1st letter capitalized and all other letter lower case and length of their name of all the employees whose name starts with '\_J', '\_A', '\_M'.
- s. Query to display Name, Department Name and Department No for all the employees.
- t. Query to display Unique Listing of all Jobs that are in Department #30.
- u. Query to display Name, Job, Department No. and Department Name for all the employees working at the Mumbai Location.
- v. Query to display Name, Dept No. and Salary of any employee whose department No. and salary matches both the department no. and the salary of any employee who earns a commission.
- w. Query to display the Highest, Lowest, Sum and Average Salaries of all the employees

- x. Query to display the Employee No. and Name for all employees who earn more than the average salary.
  - y. 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 name and 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 stock to contain the item-code, item-name, current stock, date of last purchase. Write a stored procedure to seek for an item using item-code and delete it, if the date of last purchase is before 1 year from the current date. if not, update the current stock.
  - IX. 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.
  - X. 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.
  - XI. 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.



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**Semester : IV**  
**No. Of. Hrs. allotted : 4**

**Sub. Code. : 16UITC42**  
**No. Of. Credits : 4**

**Title of the Paper: OPERATING SYSTEM**

**Course Objective:**

- To understand Operating System structures
- To Understand Asynchronous Concurrent Execution
- To become familiar with memory management and other related concepts
- To become familiar with file management
- To become familiar with Disk Scheduling

**UNIT I:**

**Introduction to Operating Systems:** Introduction, What is an Operating systems, Operating system components and goals, Operating systems architecture. Process Concepts: Introduction, Process States, Process Management, Interrupts, Interprocess Communication.

**UNIT II:**

**Asynchronous Concurrent Execution:** Introduction, Mutual Exclusion, Implementing Mutual Exclusion Primitives, Software solutions to the Mutual Exclusion Problem, Hardware solution to the Mutual Exclusion Problem, Semaphores. Concurrent Programming: Introduction, Monitors.

**UNIT III:**

**Deadlock and Indefinite Postponement:** Introduction Examples of Deadlock, Related Problem Indefinite Postponement, Resource concepts, Four Necessary conditions for deadlock, Deadlock solution, Deadlock Prevention, Deadlock Avoidance with Dijkstra's Banker's algorithm, Deadlock Detection, Deadlock Recovery. **Processor Scheduling:** Introduction, Scheduling levels, Preemptive Vs Non-Preemptive Scheduling Priorities, Scheduling objective, Scheduling criteria, Scheduling algorithms.

#### UNIT IV:

**Real Memory Organization and Management:** Introduction, Memory organization, Memory Management, Memory Hierarchy, Memory Management Strategies, Contiguous Vs Non-Contiguous Memory allocation, Fixed Partition Multiprogramming, Variable Partition multiprogramming. **Virtual Memory Management:** Introduction, page Replacement, Page Replacement strategies, Page Fault Frequency(PFF) Page Replacement, Page Release, Page Size.

#### UNIT V:

**Disk Performance Optimization:** Introduction, Why Disk Scheduling is necessary, Disk Scheduling strategies, Rotational optimization. File and Database Systems: Introduction, Data Hierarchy, Files, File Systems, File Organization, File Allocation, Free Space Management, File Access control.

Text Book:

Operating Systems, Deitel & Deitel Choffnes, Pearson education, Third edition , 2008.

UNIT I: Chapter 1: 1.1,1.2,1.12,1.13 & Chapter 3: 3.1,3.2,3.3,3.4,3.5

UNIT II: Chapter 5: 5.1, 5.2, 5.3, 5.4(up to 5.4.2), 5.5,5.6 &  
Chapter 6: 6.1, 6.2

UNIT III: Chapter 7: 7.1,7.2, 7.3,7.4,7.5,7.6,7.7,7.8,7.9,7.10  
Chapter 8: 8.1,8.2,8.3,8.4, 8.5,8.6,8.7

UNIT IV: Chapter 9: 9.1,9.2,9.3,9.4,9.5,9.6,9.8,9.9  
Chapter 11: 11.1, 11.5,11.6,11.8,11.9,11.10

UNIT V: Chapter 12: 12.1,12.4, 12.5,12.6  
Chapter 13: 13.1, 13.2,13.3,13.4,13.5,13.6,13.7,13.8

#### Reference Books:

1. An introduction to operating systems concepts and prsctice, Pramod Chandra P. Bhatt, PHI, Second Edition, 2008.
2. Operating System Concepts, Abraham Silberschatz Peter Galvin greg, gagne, 6th edition Windows XP Update, Wiley India edition,2007.
- 3.Operating Systems Principles and Design, Pal Choudhury,PHI Learning, 2001.
4. Operating Systems, A Concept Based Approach Dhananjay M.Dhamdhare Tata McGraw Hill, 3rd Edition, 2012.

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**Semester : IV**  
**No. Of. Hrs. allotted : 2**

**Sub. Code. :**  
**No. Of. Credits : 4**

**Title of the Paper : NUMERICAL METHODS**

**Course Objective:**

- To understand various numerical calculations
- To learn to matrix
- To solve numerical solution
- To solve the various methods in different equations
- To learn Interpolation

**UNIT I:**

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

**UNIT II:**

**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.

**UNIT III:**

**Interpolation & Introduction:** Newton's interpolation Fonnulae- 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- Derivatives 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.

**UNIT V:**

**Numerical Solution of Ordinary Differential Equations:** Introduction- Taylor series method- picard's method- Euler's method- Runge- kutta method of second, third, fourth order- predictor & corrector methods -Mile's method.

**Text Book:**

Numerical Methods, Second Edition S.Arumugam, A.ThangapandiIssac.

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.

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**Semester : IV**  
**No. Of. Hrs. allotted : 2**

**Sub. Code. : 16UITS41**  
**No. Of. Credits : 2**

**Title of the Paper : PHP & MYSQL**

1. Write a program to display three marks of five students in a table.
2. Write a PHP program to design a client page to get two numbers and add, subtract, multiply and divide then in server and display.
3. Write a PHP program to design a page to get age of a person and display he/she is eligible for vote or not in server page.
4. Write a PHP program to design a client page to get five marks of a student and display total, Average, Grade in server page.
5. Write a PHP program to Get 'n' value in the client page and display multiplication table of n in the server page.
6. Write a PHP program to Get two text value in client page, done string manipulation and display in server page(Any five functions).
7. Write a PHP program to find Sum of digits.
8. Write a PHP program to find Biggest number using Function.
9. Write a PHP program to display Book details using Foreach Loop.
10. Write a PHP program to display registration Form.
11. Write a PHP program to Copy from one file to another file.
12. Write a PHP program to Multiplies 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.

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**Semester : V**  
**No. Of. Hrs. allotted : 5**

**Sub. Code. : 16UITC51**  
**No. Of. Credits : 4**

**Course Objective:**

- To know about the goals of networking and the web
- To know about the Host-to-Host communication, packet switching and the logical connections
- To Know about Communication Media and Data Transmission
- To Learn about Topologies
- To Study about Protocols and Routing

**Title of the Paper : DATA COMMUNICATIONS AND COMPUTER NETWORKS**

**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 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 Datagram's - 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:**

Data Communications and Computer Networks, Brijendra Singh, Second Edition, PHI, 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. Computer Networks, Andrew S Tanenbaum, 4th Ed, Prentice Hall of India, 2006.
2. Data and Computer Communications, William Stallings, PHI, 2007.
3. Data and Computer Communication and Networking, Behrouz A. Forouzan, TMH, 2005.
4. Data Communication and Networks, Achyut S Godbole, Tata McGraw Hill, 2005.

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Semester : V  
No. Of. Hrs. allotted : 5

Sub. Code. : 16UITC52  
No. Of. Credits : 4

**Course Objective:**

- To Study about definition of Software Engineering
- To know about the Software Cost Estimation Techniques
- To Know about Software Requirements Specifications
- To Learn about Software Design Techniques
- To Study about Software Testing and Maintenance

**Title of the Paper : SOFTWARE ENGINEERING**

**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 Technique - Staffing- Level Estimation - Estimating Software Maintenance costs.

**UNIT III:**

**Software Requirements Definitions:** The Software Requirements Specification - Forms 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,New Delhi ,1997

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,2009.

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Semester : V  
No. Of. Hrs. allotted : 5

Sub. Code. : 16UITC53  
No. Of. Credits : 4

**Title of the Paper: JAVA PROGRAMMING**

**Course Objective:**

- To gain knowledge about basic oops concepts
- To learn about fundamental controls and looping statements
- To study about concepts of interface
- To gain knowledge for string and wrapper classes
- To gain knowledge of I/O and multithreading

**UNIT : I**

**Introduction** : Features of Java Programming – Types of Program – Java Architecture – Literals – Data Types – Variables – Structure of Java Program – Comments – Expressions and Statements – Types of Conversion - Arithmetic Operations – Bitwise Operators - Relational Operators – Logical Operator – Ternary Operator – Operator Precedence

**UNIT : II**

**Control Structures and Array** : If... else Statement – Switch Statement - While Statement – do... While Statement – for statement – Break in Loop – One Dimensional Array – Multi Dimensional Array.

**UNIT : III**

**Class and Interface** : Definition – New operator and Objects – dot operator – Method Declaration and Calling – Constructors – Instance Variable – this in constructor – Method over loading – Passing objects as parameters – Sub Class – Method – Variable – Abstract Class – Package – Import Statement – Interfaces.

## UNIT : IV

**String, Wrappers & Exception Class** : Number Class – Character Class – Boolean Class – String Class –  
String Buffer Class – Types Of Exception – Catching Exception – Rethrowing Exception – User Exception –  
Finally Block - Checked and Unchecked Exceptions .

## UNIT : V

**I/O and Multithreading** : I/O stream – File Class – Byte Streams – Disk File Handling – Memory Handling – Filtered Byte Stream – Random Access File – Character Stream – Multithreading – Creations - Thread –  
Multithread Programming – Thread Priorities - Waiting For Thread – Join Method – Controlling Thread.

### Text Book :

Programming in Java2, By Dr. K.Somasundaram , Publisher : First Edition  
JAICO Publishing  
House, 2008

UNIT - I : Chapters : 1.2 To 1.4, 2.1 To 2.3, 3.1 To 3.4, 4.1 To 4.6  
UNIT - II : Chapters : 5.1 To 5.7, 6.1 To 6.2  
UNIT - III : Chapters : 7.1 To 7.9, 8.1 To 8.9, 9.1 To 9.4  
UNIT - IV : Chapters : 10.1 To 10.3, 12.1 To 12.4, 12.6, 12.7, 14.1, 14.2  
UNIT - V : Chapters : 13.1 To 13.6, 13,10, 13.11, 15.1 To 15.7

### Reference Book :

1. Programming With Java , E.Balagurusamy TMH 4<sup>th</sup> Edition
2. Java 2 – Complete Reference , Hrebert Schildt , 5<sup>th</sup> Edition (2002), Mcgraw Hill Edition (India) Private Limited
3. Programming with Java (Schaum’s Outline Series) , John R.Hubbard , , 2<sup>nd</sup> Edition(2004) McGraw Hill International Editions.

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**(For those who join in 2016-2017 and after).**

**Semester : V**  
**No. Of. Hrs. allotted : 6**

**Sub. Code. : 16UITCP5**  
**No. Of. Credits : 4**

**Title of the Paper: JAVA PROGRAMMING**

**Section : A**

Write Programs in Java for the followings:

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 if the given string is palindrome or not .
5. String Manipulation using string (Use of any five string methods are preferred)
6. Write a program to file into a list. Also, copy them in reverse order into another List. If the name contains any numeric value throo an exception "Invalid Name"
7. Program to demonstrate the use built-in exception in Java.

**Section : B**

8. To perform Multiplication of Matrices using lass and object
9. Using multilevel inheritance process student mark list.
10. Implement multiple inheritances for payroll processing.
11. Implement interface for area calculation for different shapes.
12. Create a package called " Arithmetic " the contains method 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 prefect numbers between two given limits.
14. Define an exception called "Marks Out of bound "Exception that is the entered marks are greater then 100.
15. Program to demonstrate the use wrapper class methods.
16. File processing using byte stream.
17. File processing using Character stream.
18. Write applets to draw following steps :  
(a) . Cones (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.

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|                                  |                              |
|----------------------------------|------------------------------|
| <b>Semester : V</b>              | <b>Sub. Code. : 16UITE51</b> |
| <b>No. Of. Hrs. allotted : 5</b> | <b>No. Of. Credits : 4</b>   |

**Title of the Paper: MOBILE COMPUTING**

**Course Objective:**

- To gain knowledge about basic mobile protocols
- To learn about fundamental of TCP/IP
- To study about concepts of GPRS and GSM
- To gain knowledge for ADOHC networks
- To gain knowledge of mobile applications

**UNIT: I**

**INTRODUCTION:** Mobile computing - Mobile computing Vs wireless networking – Mobile computing Applications – characteristics of Mobile Computing – Structure of Mobile Computing, MAC protocols – Wireless MAC issues – Fixed Argument scheme – 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 og TCP/IP – Adaptation of TCP Window – Improvement in TCP performance.

**UNIT: III**

**MOBLIE TELECOMMUNICATION SYSTEM :** Global System for Mobile communication (GSM) – General Packet Radio Service (GPRS) – universal Mobile Telecommunication –(UTMS).

#### **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 Network (VANET) – MANET Vs VANET – Security

#### **UNIT: V**

**MOBILE PLATFORM AND APPLICATIONS:** Mobile Device Operating System – Systems – Special Constrains & Requirement – Commercial Mobile Operating Systems – Software Development Kit n : 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 : .25 – 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 Book:**

1. Mobile communications, Jochen H.Scheller , 2<sup>nd</sup> Edition , Pearson Education, New Delhi, 2007
2. Introduction to wireless and Mobile systems, Dharma Prakash Agarval, Quie and Anzeng, Thomson Asia Pt. Ltd, 2005
3. Principles Of Mobile Computing, UweHansmann, LotharMerk, Martin s. Nicklons and Thomas Stober , Springer, 2003 .

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**Semester : V**  
**No. Of. Hrs. allotted : 5**

**Sub. Code. : 16UITE52**  
**No. Of. Credits : 4**

**Title of the Paper: COMPUTER GRAPHICS**

**Course Objective:**

- To gain knowledge about basic computer devices
- To learn about fundamental of circle, ellipse generation
- To study about concepts of line, curve attribute and color property
- To gain knowledge for geometric transformations
- To gain knowledge of window, viewing transformations, line and text clipping.

**UNIT: I**

**A Survey of Computer Graphics :** Computer - Aided Design - Presentation Graphics – Computer Art – Entertainment - Education and Training – Visualization – Image Processing – Graphical User Interface.  
**Overview of Graphical Systems :** Video Display Devices – Raster scan System – Random Scan System – Input Devices - Hard Copy devices.

**UNIT : II**

**Output primitive: Points And Lines – Line Drawing Algorithms – Circle Generation Algorithms – Ellipse Generation Algorithms - Filled Area Algorithms**

**UNIT : III**

**Attributes of Output Primitive:** Line Attribute - Curve Attribute – Color and Gray Scale Levels – Area Fill Attribute – Character Attribute – Bundle Attributes – Inquiry Functions – Antialiasing .

#### **UNIT: IV**

**Two – Dimensional Geometric Transformation** : Basic Transformation – Matrix Representation – Composite Transformation – Other Transformation – Transformation between Coordinate Systems

#### **UNIT: V**

**Two – Dimensional Viewing** : Viewing Coordinate reference Frame – Window to Viewport Coordinate Transformation – Two Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Cure Clipping – Text Clipping – Exterior Clipping .

#### **Text Book:**

Computer Graphics , Donald Hearn and M Pauline Baker, Pretice Hall Of India Pvt. Ltd, New Delhi, 1994.

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 : 5.5  
UNIT - V : Chapters : 6.11

#### **Reference Books:**

1. Computer Graphics, Multimedia Animation, - Malry 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 .



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Semester : V  
No. Of. Hrs. allotted : 5

Sub. Code. : 16UITE53  
No. Of. Credits : 4

**Title of the Paper: INFORMATON SEURITY**

**Course Objective:**

- To gain knowledge about basic concepts of security
- To learn about fundamental of security needs
- To study about concepts of risk analysis
- To gain knowledge for how to plan an security
- To gain knowledge of security technology

**UNIT : I**

**Introduction:** History of Information security – What is Security – CNSS security Model – Components of Information System - Balancing Information and Access – Approaches to Information Implementation –The SDLC – The securitySDLC

**UNIT : II**

**Security Investigation:** Need for security, Business Nodes, Threats, attacks, Professional, Legal and Ethical issues in Information security.

**UNIT: III**

**Managing IT Risk: An** Overview of Risk Management –Risk Identification - Risk Assessment - Risk Control Strategies – Select Risk Control Strategy – Quantitative Versus Qualitative risk Control practices  
Ling Risk.

## **UNIT : IV**

**How to Plan For Security:** Information Security Planning and Governance – Information security policy, Standard and Security and practices – ISO 17799/BS 7799. NIST models, VISA International Security Model, Design security for architecture – Continuity Strategies.

## **UNIT: V**

**Security Technology :** Introduction – Intrusion Detection , Prevention system – scanning and analysis tools – Biometric access controls – Cipher methods – cryptography algorithm – cryptography tools – protocols for secure communication – Attacks on cryptosystem .

### **Text book:**

Principles of information security, Micheal E , Whitman and Herbred J Mattord , 4<sup>th</sup> Edition , CENGAGE learning 6<sup>th</sup> Indian reprint 2013

### **Reference Books :**

1. Handbook of Information Security Management, Micki Kresues , Harold F . Tipton, Vol. 1.3 CRC Press LLC , 2004
2. Hacking Exposed , Stuart mc culre , Joel Screambray , Geprge Kuttz TMH, 2003
3. Computer Security, Art and science, Matt Bishop, prason / PHI 2002.

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**Semester : V**  
**No. Of. Hrs. allotted : 2**

**Sub. Code. : 16UITS51**  
**No. Of. Credits : 2**

**Title of the Paper: NETWORKING**

1. Get detailed IP address for a System
2. Send data from client to server using UDP
3. Send data from client to server using TP
4. Use Threads to receive multiple connection for a single sever socket
5. Send a file from serer to multiple client
6. Create a chat room using TCP and UDP
7. Using RMI do mathematical operations by sending the 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 tracker
  - a) Static Routing
  - b) Dynamic Routing
  - c) Link state Routing Protocols

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Semester : VI  
No. Of. Hrs. allotted : 5

Sub. Code. : 16UITC61  
No. Of. Credits : 4

**Title of the Paper: ANDROID PROGRAMMING**

**Course Objective:**

- To gain knowledge about basic concepts of android
- To learn about fundamental of security of interfacing concepts
- To study about concepts of user expressions
- To gain knowledge for how to audio, video and picture processing concepts
- To gain knowledge of database and distributed applications

**UNIT : I**

**Hello Android** : A little back round - what Android Isn't Android ; An open platform for Mobile development – Native Android Application – Android STK features – Introduction to open handset alliance- What Dose Android Run on – Why develop for mobile – why develop for android – Introduction to develop Frameworks –getting started - Develop for android - developing for mobile and Embedded –Android development tools - **Creating Application And Activities** : what makes an android application – introduction the application main fast file – Using the main fast Editor –Externalizing resources - The Android Application Lifecycle – Introducing Android application class – A closer Look at an android –activities .

**UNIT :II**

**Building User Inter faces:** Fundamental Android UI Design – Android user interfaces fundamentals – Introducing Layouts - Introducing fragment – creating new views - Introducing Adaptors Intent and **Broadcast Receivers:** Introducing Intents –creating intent filters and Broadcast Receivers. Using Internet Resource Downloading and Parsing internet recourse the download manager

### UNIT: III

**Expanding the user Experience:** Introducing for Action bar – Creating the new menus and action bar action terms – Introducing Dialogue – Introducing Notification – **Advanced User Experience:** Working with Animation – Enhancing your views.

### UNIT: IV

**Invading the home Screen:** Introducing home screen widgets – creating app Widgets – Creating live wallpaper. Video and **using the camera:** Playing audio and videos hashing the camera for tasking pictures – Recording Video

### UNIT: V

**Database and Current Providers:** Introducing Android Database - Introducing SQLite Current value and Cursors – Working with SQLite Database – create content providers – Using Content Providers. **Maps, Geo coding, and Location - Based Service:** Using Location Based Service – Using the Emulator With location Based Service – selecting a location provider - Finding your current location. **Monetizing, Promoting, distributing Applications:** Signing And Publishing Applications – Distributing Applications.

### Text book:

Professional Android 4 Applications Development, REto Meier, Wiley India Pvt. Ltd 2012.

|            |            |           |
|------------|------------|-----------|
| UNIT - I   | : Chapters | : 1,2,3   |
| UNIT - II  | : Chapters | : 4,5,6   |
| UNIT - III | : Chapters | : 10,11   |
| UNIT - IV  | : Chapters | : 14,15   |
| UNIT - V   | : Chapters | : 8,13,19 |

### Reference books:

1. The busy coders Guide to Android Application, Mark I.Mutphy Commons ware LLC, 2016
2. Android App for Absolute Beginners – Wallce Jackson , Apress Publishing , 2014.

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Semester : VI  
No. Of. Hrs. allotted : 6

Sub. Code. : 16UITCP6  
No. Of. Credits : 4

**Title of the Paper: WEB PROGRAMMING**

(Select One question From JavaScript And ASP)

**JavaScript & ASP**

- 1 Write a JavaScript Program To Generate Fibonacci Series
- 2 Write a JavaScript Program for Checking Palindrome Or Not.
- 3 Write a JavaScript Program To Validate Form.
- 4 Write a JavaScript Program To Create Popup Window
- 5 An Html Form With A JavaScript Event Handler
- 6 Write a JavaScript Program To remove Items A Dropdown List
- 7 Write a JavaScript Program To Display Random Image
- 8 Write a JavaScript Program Valid An Email Address.
- 9 Write a JSP to add the contents for Another JSP file Using @include directive
- 10 Write a JSP to Check Whether the given Number is prime Or Not
- 11 Write a JSP to forward to one JSP file To another JSP File using forward action.

**ASP.Net**

- 12 . Working With Page and Forms Using Asp.Net
- 13 To Create An Account Registration Form And Perform the Following Validation
  - a) Username
  - b) Password
  - c) Retype Password
  - d) Gender
  - e) E-Mail ID
  - f) Date Of Birth
  - g) Mobile

14. To Read Students Details From Xml File.
15. To Display Vehicle Details In Tree View Control from Xml File
16. Create Any Application Program sever Control
17. To Process Student Database Using **Sqldatasource** control
18. To Display Employee Details From The database Using Sitemapdatasouce
19. To read and Display Personal Database Using Xml Data Source Control
20. Create a Web Page for Your Department
21. Send and Mail

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**Semester : VI  
No. Of. Hrs. allotted : 5**

**Sub. Code. : 16UITC62  
No. Of. Credits : 4**

**Title of the Paper: SOFTWARE TESTING**

**Course Objective:**

- To gain knowledge about quality of software
- To learn about fundamental of Testing phases
- To study about concepts of specialized testing
- To gain knowledge for how to test the plan execution
- To gain knowledge of how to performance of test

**UNIT I:**

**SETTING THE CONTEXT:** Principles of Testing-Software Development Life Cycle Models: Phases of Software Project-Quality, Quality Assurance, and Quality Control-Life Cycle Models. **TYPES OF TESTING:** 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 Srinivasan Desikan and Gopaldaswamy Ramesh,Pearson Education,2012.

Unit I: Chapter 1,2,3,4

Unit II: Chapter 5,6,7,8

Unit II: Chapter 11,12

Unit II: Chapter 13,14

Unit II: Chapter 15,16,17

### **Reference Books:**

1. Effective Methods of Software Testing,William Perry,Third Edition,Wiley Publishing 2007.
2. Software Testing Principles and Practises,Naresh Chauhan,Oxford University Press,New Delhi,2010.1995.

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**Semester : VI**  
**No. Of. Hrs. allotted : 5**

**Sub. Code. : 16UITE61**  
**No. Of. Credits : 4**

**Title of the Paper: INTRODUCTION TO UNIFIED MODELING LANGUAGE**

**Course Objective:**

- To gain knowledge about oops concepts
- To learn about fundamental of UML process
- To study about concepts of oops to perform class description of UML classes
- To gain knowledge for how to analysis UML classes
- To gain knowledge of how to performance on net based UML classes

**UNIT I:**

**Object Oriented Methodologies:** Introduction - Survey of some of the Object Oriented Methodologies – Rumbaugh et al's Object Modeling Technique- the booch methodology - The Jacobean et al. Methodologies – Patterns – Frameworks – The Unified approach

**UNIT II:**

Unified Modeling Language- Introduction - Static and Dynamic Models- Why Modeling – Introduction to the Unified Modeling Language – UMS Diagrams – UML Class Diagram – User Case Diagram – UML Dynamic Modeling – Model Management – UML Extensibility – UML Meta Model.

**UNIT III:**

Object Oriented Analysis process- Introduction – Why Analysis is a Difficult activity – Business object analysis – use-case driven object oriented analysis – business process modeling – use-case model – developing effective documentation – case study

#### **UNIT IV:**

**Object analysis:** Classification – classification theory – approaches for identifying classes – noun phrases approach – common class patterns approach – use-class driven approach – classes, responsibilities and collaborators- naming classes

#### **UNIT V:**

Identifying object relationships, attributes and methods – associations – super – sub class relationships – A part of relationships aggregation – case study – class responsibility – defining attributes for ViaNet Bank objects – Object responsibility – Defining methods for ViaNet Bank objects.

#### **Text Book:**

Object oriented systems development using Unified Modeling Language – Ali Bahrami – TMH edition, 2008.

Unit I: Chapters 4

Unit II: Chapters 5

Unit III: Chapters 6

Unit IV: Chapters 7

Unit V: Chapters 8

#### **Reference Book:**

Object oriented analysis and design using UML – Mahesh P Matha – PHI, 2008

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Semester : VI  
No. Of. Hrs. allotted : 5

Sub. Code. : 16UITE62  
No. Of. Credits : 4

**Title of the Paper: COMPILER DESIGN**

**Course Objective:**

- To gain knowledge about concepts of DFA
- To learn about fundamental of free grammar process
- To study about concepts of syntax analysis
- To gain knowledge for how to rectify system formulas
- To gain knowledge of DAG, assignment code and peepholes optimization on PC

**UNIT I:**

**Introduction to Compilers:** Compilers and Translators – Need of Translator – The Structure of a Compiler – Lexical analysis – Syntax analysis – Intermediate code generation– optimization – code generation – compiler\ - 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 – representing scope information.

#### **UNIT IV:**

**Run time storage administrations:** 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 – peephole optimization.

#### **Text Book**

Principles of Compiler Design, Alfred V.Aho, Jeffrey D.Ullman, Narosa Publishing House. 25<sup>th</sup> 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: 12 & 15

#### **Reference Book**

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

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**Semester : VI**  
**No. Of. Hrs. allotted : 5**

**Sub. Code. : 16UITE63**  
**No. Of. Credits : 4**

**Title of the Paper: CRYPTOGRAPHY AND NETWORK SECURITY**

**Course Objective:**

- To gain knowledge about concepts of OSI layers
- To learn about fundamental of Cryptographic concepts
- To study about concepts of AES, RSA and RC4
- To gain knowledge for digital signatures
- To gain knowledge of authentication process and firewall security system

**UNIT I**

Security Trends-The OSI Security architecture- Security Attacks-Security Services-Security mechanism-A model for network security-Symmetric cipher model-Substitution techniques-Transposition Techniques-Block Cipher Principles-The Data Encryption Standard – The strength of DES-Block Cipher design Principles

**UNIT II**

Evaluation Criteria for AES-The AES Cipher-Multiple Encryption and Triple DES-Block Cipher Modes of Operation-Stream Cipher and RC4-Confidentiality using symmetric encryption-Introduction to number theory-public-key cryptography and RSA.

**UNIT III**

Key management- Diffie Hellman Key exchange-message authentication and hash function-hash algorithm-digital signatures and authentication protocols- digital signature standard.

## **UNIT IV**

Authentication application-Electronic mail security-IP Security-Web security.

## **UNIT V**

Intruders-Malicious software-Firewalls.

### **Text Book**

CYPTOGRAPHY AND NETWORK SECURITY,Principles and practices-William Stallings,IVth Edition,PHI Education Asia,2006.

Unit I: Chapters 1.1 to 1.6, 2.1 to 2.3, 3.1 to 3.3 & 3.5

Unit II: Chapters 5,6,7,8,9

Unit III: Chapters 10.1,10.2,11,12

Unit IV: Chapters 14,15,16,17

Unit V: Chapters 18,19,20

### **Reference Books:**

1. CYPTOGRAPHY AND NETWORK SECURITY, Atul Kahate-second edition,TMH.
2. CYPTOGRAPHY AND NETWORK SECURITY,Behrouz A.Forouzan,TMH.

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**Semester : VI**  
**No. Of. Hrs. allotted : 2**

**Sub. Code. :**  
**No. Of. Credits : 2**

**Title of the Paper: QUANTITATIVE APTITUDE**

**Course Objective:**

- To gain knowledge about concepts of shortcuts
- To learn about fundamental Age, roots problems
- To study about concepts profit and loss methods with their shortcuts
- To gain knowledge for time and distance problem for computational methods
- To gain knowledge of interest, area and volume calculation and their shortcuts

**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 & Proportions.

**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

## **Refence Books:**

1. Quantitative Aptitude and reasoning,R. V.Praveen,PHI Learning,2<sup>nd</sup> Edition 2013.
2. Magical book on Quicker Maths,M.Tyra,BSC Publishing Co.Pvt.Ltd,Delhi \.Reprint,2011.
3. Quantitative Aptitude for Competitive Exams,Abhijit Guha, 4<sup>th</sup> Edition,Tata Mc Graw Hill Company,New Delhi.