B.C.A.

SEM	COURSE CODE	PART	COURSE	COURSE TITLE	HRS / WEEK	CREDIT	CIA MARKS	SE MARKS	TOTAL MARKS
I	14 U1LT1/LA1/ LH1/LU1/LF1	I	Language – I		6	3	40	60	100
	14UCN1E1	II	English – I		6	3	40	60	100
	14UCA1A1	III	Allied I	Numerical Methods and Statistics	6	4	40	60	100
	14UCA1C1	III	Core I	Programming in C	6	4	40	60	100
	14UCA1M1P	III	Major Based Elective – I	C Programming Lab	3	3	40	60	100
	14UCN1VE	IV	Value Education	Value Education	3	3	40	60	100
TOTAL					**30**	**20**	**240**	**360**	**600**
II	14U2LT2/LA2/ LH2/LU2/LF2	I	Language – II		6	3	40	60	100
	14UCN2E2	II	English – II		6	3	40	60	100
	14UCA2A2	III	Allied II	Operation Research	5	4	40	60	100
	14UCA2C2	III	Core II	Programming in C++	6	4	40	60	100
	14UCA2M2P	III	Major Based Elective – II	C++ Programming Lab	3	3	40	60	100
	14UCA2N1	IV	Non-Major Elective – I#		2	2	40	60	100
	14UCN2ES	IV	Environmental Studies	Environmental Studies	2	2	40	60	100
TOTAL					**30**	**21**	**280**	**420**	**700**
III	14U3LT3/LA3/ LH3/LU3/LF3	I	Language – III		6	3	40	60	100
	14UCN3E3	II	English – III		6	3	40	60	100
	14UCA3A3	III	Allied III	Organizational Behaviour	6	4	40	60	100
	14UCA3C3	III	Core III	Visual Programming	5	4	40	60	100
	14UCA3M3P	III	Major Based Elective – III	Visual Programming Lab	3	3	40	60	100
	14UCA3N2	IV	Non-Major Elective – II#		2	2	40	60	100
	14UCN3S1	IV	Skill Based Elective – I	Soft Skills	2	2	40	60	100
TOTAL					**30**	**21**	**280**	**420**	**700**
IV	14U4LT4/LA4/ LH4/LU4/LF4	I	Language – IV		6	3	40	60	100
	14UCN4E4	II	English - IV		6	3	40	60	100
	14UCA4A4	III	Allied IV	Principles of Accountancy	4	2	20	30	50
	14UCA4A4P	III	Allied IV P	Tally Lab	2	2	20	30	50
	14UCA4C4	III	Core IV	Digital Electronics	5	4	40	60	100
	14UCA4C5	III	Core V	Data Structures	5	4	40	60	100
	14UCA4S2	IV	Skill Based Elective – II	General Aptitude	2	2	40	60	100
	14UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	2	-	-	-
	14UCA4EC1		Extra Credit – I	Design and Analysis of Algorithms	-	4*	-	100*	100*
	14UCA4EC2		Extra Credit – II	Microprocessors	-	4*	-	100*	100*
TOTAL					**30**	**22**	**240**	**360**	**600**
V	14UCA5C6	III	Core VI	Java Programming	5	4	40	60	100
	14UCA5C7	III	Core VII	Database Management Systems	4	4	40	60	100
	14UCA5C8	III	Core VIII	Operating Systems	4	4	40	60	100
	14UCA5C9	III	Core IX	Multimedia Technology	4	4	40	60	100
	14UCA5C10P	III	Core X	Java Programming Lab	4	4	40	60	100
	14UCA5C11	III	Core XI	E-Commerce	4	4	40	60	100
	14UCA5M4P	III	Major Based Elective– IV	Data Structures Lab	3	3	40	60	100
	14UCA5S3	IV	Skill Based Elective – III	Web Design	2	2	40	60	100
	14UCA5EC3		Extra Credit – III	Enterprise Resource Planning	-	4*	-	100*	100*
TOTAL					**30**	**29**	**320**	**480**	**800**
VI	14UCA6C12	III	Core XII	Computer Graphics	5	4	40	60	100
	14UCA6C13	III	Core XIII	Computer Networks	5	4	40	60	100
	14UCA6C14	III	Core XIV	Fundamentals of Linux	3	2	20	30	50
	14UCA6C14P	III	Core XIV	Shell Programming Lab	2	2	20	30	50
	14UCA6C15	III	Core XV	IT Systems Management	4	4	40	60	100
	14UCA6C16	III	Core XVI	PHP Programming	4	4	40	60	100
	14UCA6C17P1	III	Core XVII	PHP Lab	2	2	20	30	50
	14UCA6C17P2	III	Core XVII	XML Lab	2	2	20	30	50
	14UCA6S4	IV	Skill Based Elective – IV	Fundamentals of XML	2	2	40	60	100
	14UCN6GS	V	Gender Studies	Gender Studies	1	1	40	60	100
	14UCA6EC4		Extra Credit – IV	Mobile Communications	-	4*	-	100*	100*
TOTAL					**30**	**27**	**320**	**480**	**800**
GRAND TOTAL					**180**	**140**	**1680**	**2520**	**4200**

Non Major Elective Courses offered to the other Departments:

SEM	COURSE TITLE
II	Fundamentals of IT
III	Internet and its Applications

* Not considered for Grand Total and CGPA

SEMESTER - I: ALLIED–I

NUMERICAL METHODS AND STATISTICS

Course Code : 14UCA1A1 **Max. Marks : 100**
Hours/week : 6 **Internal Marks : 40**
Credit : 4 **External Marks : 60**

Objective:

To provide basic knowledge of numerical and statistical methods for Computer Applications.

UNIT-I **18 hours**

Solution of Algebraic and Transcendental Equations, Iterative Methods – Bisection Method – Method of False Position – Newton Raphson Method – Rate of Convergence of the Iterative Procedure – Secant Method – #Successive Approximation Method# – Comparison of Iterative Methods.

UNIT-II **18 hours**

Solution of System of Linear Equations – Gauss Elimination Method, Gauss Jordan Method, Gauss Jacobi Method– Gauss Seidel Method. Interpolation – Introduction – Linear Interpolation – Gregory – Newton's Forward Interpolation Formula – #Gregory# – Newton's Backward Interpolation Formula (Simple Problems).

UNIT-III **18 hours**

Diagrammatic and Graphical Representation of Numerical Data – Formation of Frequency Distribution – Histogram, Cumulative Frequency – Polygon and Ogives – Measures of Central Tendency – Measures of Dispersion – Moments and Measures of Skewness and Kurtosis.

UNIT-IV **18 hours**

Theory of Probability – Definitions of Probability – Sample Space – Probability of an Event – Independence of Events – #Theorems on Probability# – Conditional Probability – Baye's Theorem.

UNIT-V **18 hours**

Correlation and Regression – Properties of Correlation and Regression Coefficients – Numerical Problems for Finding the Correlation and Regression Coefficients.

 # ..... # self-study portion .

Text Books:

1. Dr. M.K. Venkataraman, *Numerical Methods in Science and Engineering*,The National Publishing Company, Chennai, 2001.
2. S.C. Gupta, V.K. Kapoor, *Fundamentals of Mathematical Statistics,*Sulthan Chand & Sons, 2009.

UNIT I: Chapter3:Section 1to 5 UNIT II :Chapter 4: Section:1,2, 6&7
UNIT III : Chapter 2: Section:2.1to 2.9, 2.12 to 2.1, 2.16 & 2.17
UNIT IV : Chapter 3: Section-3.1-3.5,3.8-3.13,4.2
UNIT V : Chapter 10: Section:10.1 – 10.4.2, 10.7,Chapter 11: 11.1 – 11.2.5

Books for Reference:

1. S.S. Sastry, Introductory Methods of numerical analysis, Prentice Hall of India Pvt. Ltd., 2004
2. S.C. Gupta, V.K. Kapoor, Elements of Mathematical Statistics, Sultan Chand & Sons, 2009.

SEMESTER - I: CORE - I
PROGRAMMING IN C

Course Code: 14UCA1C1 | **Max. Marks : 100**
Hours/week : 6 | **Internal Marks : 40**
Credit : 4 | **External Mark : 60**

Objective:

To learn the syntax of all the statements and to provide programming skills in C.

UNIT-I **18 hours**

Overview of C – Constants, Variables & Data Types – #Operators and Expressions#.

UNIT-II **18 hours**

Decision Making and Branching Statements – Looping Statements – User Defined Functions.

UNIT-III **18 hours**

Arrays – Strings – #Structures and Unions#.

UNIT-IV **18 hours**

Pointers – Pointer Expressions – Pointers and Arrays – #Pointers and Functions#.

UNIT-V **18 hours**

Files Management in C– I/O Operations on Files – #Random Access Files#.

(18 Hours)

 # ..... # self-study portion.

Text Book:

E. Balagurusamy, *Programming in ANSI C*, Tata McGrawHill Publishing Company, Fourth Edition, 2009.

UNIT I : Chapters 1: Section 1.5, 2.6 Chapters 2: Section 2.6 Chapters 3:Section 3.2 – 3.7, 3.10,3.13,3.14,3.18,3.18
UNIT II : Chapters 4: Section 4.2, 4.4, 4.6, 4.7, 4.9, 4.11 Chapters 5: Section: 5.3-5.7,5.9,5.11,5.12,5.15,5.16
UNIT III : Chapters 6: Section6.2-6.8 Chapters 7: Section 7.1 – 7.3
UNIT IV : Chapters 8: Section8.1, 8.3, 8.5-8.7) Chapter 9: Section9.1 – 9.6
UNIT V : Chapters 11: Section11.1 – 11.5 Chapter 12: Section12.1 – 12.4 , 12. 7

Books for Reference:

Yeshavanth P. Kanetkar, Let us C, BPB Publications, 13th Edition 2013.

SEMESTER – I: MAJOR BASED ELECTIVE – I
C PROGRAMMING LAB

Course Code: 14UCA1M1P **Max.Marks:100Hours/week: 3**
Internal Marks: 40
Credit : 3 **External Mark : 60**

Objective:

1. Simple programs:
   (a) To find the volume of a cylinder.
   (b) To swap the values of two numbers without using third variable.

(5 Hours)

2. Programs using operators and loops:
   (a) To find the smallest of three numbers using logical operators.
   (b) To display all the roll numbers of your class (increasing and decreasing order) using for loop and while loop.

(5 Hours)

3. Programs to perform the following:-
   (a) Sum of 1+2+3+…..+n.
   (b) Addition, subtraction and multiplication of two numbers using switch statement.

(5 Hours)

4. Program to display the following patterns:-

(a)
```
1
1 1
1 1 1
```

(b)
```
*
* *
* * *
* * * *
```

(6 Hours)

5. Declare, define and call three functions getdata(), calculate() and putdata(). Receive the inputs such as student name, rollno, mark1, mark2 and mark3 using getdata(). Calculate the total and average using calculate(). Display the student name, rollno, mark1, mark2, mark3, total and average using putdata().

(6 Hours)

6. Program to perform matrix addition using two dimensional arrays.

(6Hours)

7. Programs using strings concept:
   (a) To display the following alphabetic patterns:-

(i)
```
A
A A
A AA
A AAA
```

(ii)
```
A
A B
A B C
A B C D
```

(6 Hours)

8. Program using Files for Mark sheet preparation.

SEMESTER - II :ALLIED-II

OPERATIONS RESEARCH

Course Code: 14UCA2A2 **Max. Marks : 100**
Hours/week : 5 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To provide an overall idea about the various operations research techniques and their applications.

UNIT-I **15 hours**

Operations Research – Nature and Features of Operations Research – Advantages and Limitations Operations Research - Linear Programming Problem (LPP) - Mathematical Formulation of the Problem – #Graphical Solution of LPP#.

UNIT-II **15 hours**

General LPP – Canonical and Standard Forms of LPP – The Computational Procedure – Simplex Method - #Two Phase Simplex Method#.

UNIT-III **15 hours**

Transportation Problem – Introduction – LPP Form of Transportation Problem – Solutions of a Transportation Problem - Finding Initial BFS - NWC rule – LCM - VAM (Balanced Only).Assignment Problem – Introduction – Mathematical Form of Assignment Problem – Hungarian Assignment Method (Balanced Only).

UNIT-IV **15 hours**

Sequencing Problems: Introduction – Processing of n Jobs through Two Machines – Processing of n Jobs through k Machines - Replacement Problem: Introduction – Replacement of Equipment / Asset that Deteriorates Gradually – Replacement Policy when Value of Money Changes with Time.

UNIT-V **15 hours**

Network Scheduling by PERT / CPM – Basic Concept – Construction of Networks – Critical Path Analysis –#Probability Considerations#- in PERT – Comparison of PERT and CPM.

 # ..... # self-study portion.

Text Book:

KantiSwarup, P.K. Gupta and Man Mohan, Operations Research, Sultan Chand and Sons Publishers, New Delhi, 1992.

Unit-I : Chapters 1 & 2, Chapter 3 (3.1 – 3.3)
Unit-II : Chapter 3 (3.4, 3.5), Chapter 4 (4.1, 4.3 Except Big-M Method)
Unit-III : Chapter 10 (10.1, 10.2, 10.8, 10.9), Chapter 11 (11.1 – 11.3)
Unit-IV : Chapter 12 (12.1 – 12.5), Chapter 18 (18.1, 18.2, 18.2.1, 18.2.2)
Unit-V : Chapters 25(25.1 – 25.8)

Books for Reference :

1.Hamdy A. Taha, Operations Research : An Introduction, PHI, New Delhi, 8th Edition 2008.
2. A. Ravindran, Don T. Phillips, James J. Solberg, *Operations Research Principles and Practice*, John Wiley & Sons, Second Edition, Third Reprint 2007.

SEMESTER - II :CORE - II
PROGRAMMING IN C++

Course Code: 14UCA2C2 **Max. Marks :100**
Hours/week : 6 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To give the concepts of Object Oriented Programming, the syntax of statements in C++ language and to impart the programming skills in C++.

UNIT-I **18 hours**

Object Oriented Programming concepts: Basic concepts of OOPS-Structure of C++ Program- Tokens-Keywords-Identifiers-constants-Basic data types-User defined data types-Derived data types-Declaration of variables-Reference variables-Manipulators- Operator in C++ - Scope Resolution Operator-Type cast Operator-Expression and its types-#control structures#.

UNIT-II **18 hours**

Functions: Main Function-Call by reference-Inline function-Function overloading-Default arguments-Math Library functions-**Classes and Objects:-**Specifying the class –Defining Member Function –A C++ Program with class-Nesting of Member Function-Arrays within a class-Static data members and Static member functions-#Friend Function#-Returning Object.

UNIT-III **18 hours**

Constructor and Destructor: Constructors-Parameterized constructor-Multiple constructor in a class-Dynamic initialization of the objects-Copy constructor-Dynamic constructor-Destructor.
Operator Overloading and Type conversion: Defining operator overloading-Overloading unary operator-#Type conversion#.

UNIT-IV **18 hours**

Inheritance: Introduction-Single Inheritance-Multilevel inheritance-Multiple inheritance-hierarchical inheritance-Virtual base classes. **Polymorphism:** Pointers-Pointer to objects-this pointer-Pointer to derived classes-#Virtual Functions#. **(18 Hours)**

UNIT-V **18 hours**

Working with Files: Introduction-Classes for File stream- Opening and closing the file-Detecting end of file-File modes.**Templates:** Introduction- Class templates-Class templates with multiple parameters-Function templates –Member Function templates.

 # ..... # self-study portion.

TextBook:

E.Balagurusamy,Object Oriented Programming With C++, [Fourth Edition], Tata McGraw Hill Publications, 2008.

UNIT I : 1.5, 2.6, 3.2 – 3.7, 3.10, 3.17, 3.13, 3.14, 3.18, 3.24
UNITII: 4.2, 4.4, 4.6, 4.7, 4.9, 4.11, 5.3 - 5.7, 5.9, 5.11, 5.12, 5.15 – 5.16
UNIT III: 6.2, 6.3 – 6.8, 7.1 – 7.3
UNITIV: 8.1, 8.3, 8.5 – 8.7, 9.1 – 9.6
UNITV: 11.1 – 11.5, 12.1 – 12.4, 12.7

Books for Reference:

Herbert Schildt, Teach yourself C++, Third Edition, TataMcGraw Hill Publications, 2008.

SEMESTER - II :MAJOR BASED ELECTIVE – II

C++ PROGRAMMING LAB

Course Code:14UCA2M2P **Max. Marks : 100**

Hours/week : 3 **Internal Marks : 40**

Credit : 3 **External Mark : 60**

Programs without class and objects

1. Write a C++ Program to convert centigrade to Fahrenheit [Formula F=(1.8*C)+32]
2. Write a C++ Program to convert decimal number to binary number
3. Write a C++ Program to perform factorial of the given number.
4. Write a C++ Program to print Triangle of numbers.
5. Write a C++ Program to find no of vowels and no of consonants in a given string using array. **(20 Hours)**

Programs using class and objects

6. Develop a C++ Program to print your personal details such as name, Roll no, Gender(M/F),
   Marks for five subjects, Total, Result (Pass/Reappear) by taking input from the user and display the same using two member functions.
   Write a main program to invoke the member functions.
   (5 Hours)
7. Develop a C++ Program to find volume of cube, cylinder and rectangular box using function overloading. **(5 Hours)**
8. Develop a C++ Program to find mean of n numbers using friend function. **(5 Hours)**
9. Develop a C++ Program to implement the concept of Single level inheritance. **(5 Hours)**
10. Develop a C++ Program to illustrate the concept of virtual function. **(5 Hours)**

SEMESTER - II :NON MAJOR ELECTIVE – I

FUNDAMENTALS OF IT

Course Code: 14UCA2N1 **Max. Marks : 100**
Hours/week : 2 **Internal Marks : 40**
Credit : 2 **External Mark : 60**

Objective:

To impart knowledge about the fundamental concepts of information technology.

UNIT-I **6 hours**

Introduction: Computers – Classifications. Memory units. Input and Output Devices. Software: OS – Programming languages – #Software packages#.

UNIT-II **6 hours**

Database – Record – Table - DBMS – #Sorting# – Searching, Data warehouse – Data mining.

UNIT-III **6 hours**

Computer Graphics – Multimedia – Tools – Virtual reality – Animations – applications.

UNIT-IV **6 hours**

Computer Networks – Types – Modem - #Internet# – Email – Ecommerce - Hypermedia.

UNIT-V **6 hours**

Computers – Home – Education and training – Business – Science - Medicine - #GIS#

 # ..... # self-study portion.

Text Book:

Alex Leon, Mathews Leon,*Fundamental of Information Technology*: Leon Vikas Publications, Chennai,1998.

UNIT I: 1,2,6,8-12
UNIT II: 15,28-30
UNIT III:24-26
UNIT IV: 18,22,28
UNIT V: 32 – 35

Books for Reference:

Suresh K Bosandra, *Computers Today*, GalgotiaPublications Limited, New Delhi, 2010.

SEMESTER - III :ALLIED – III
ORGANIZATIONAL BEHAVIOUR

Course Code: 14UCA3A3 **Max. Marks : 100**
Hours/week : 6 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To enable the students to understand the concepts of individual and group behavior in an organization.

UNIT – I **18 hours**

Nature of Organization: Concept of Organization –Features of Organization – Organization Goals (Meaning) – Individual Goals (Meaning) – Nature of Organizational Behavior: OB and Similar Fields of Studies – #Nature of OB# – Contributing Disciplines to Organizational Behavior – Nature of Human Behavior –Caused Nature of Behavior –Process of Behavior.

UNIT –II **18 hours**

Perception: Concept of Perception – Perception and Sensation –Perception Process – Managerial Implication of Perception – Developing Perceptual Skills. Learning: Components of Learning Process.– #Learning Theory# – Reinforcement Principle.Personality Concept – PersonalityTheories –Determinants of Personality.

UNIT –III **18 hours**

Attitude:Concept of Attitudes – Features – Motivation: Definition of Motivation – Theories of Motivation – Maslow's Need Hierarchy – Two-Factor Theory – Theory X and Y.Dynamicsof Stress – Concept and Features of Stress – Causes of Stress – Effects of Stress – Copying Strategies of Stress.

UNIT –IV **18 hours**

Group Dynamics: Concept of Group Dynamics – Concepts and Features of Group – Types of Groups – Formal and Informal Groups – Features and Distinction. Leadership: Meaning – Approaches –# Styles#.

UNIT – V **18 hours**

Communication: Concept – Communication Process – Direction of Communication – Barriers in Communication – Making Communication Effective. Organizational Change and Development: Reasons for Organization Change – Resistance to Change – Overcoming Resistance to Change – Organizational Development – Need for OD – Steps in OD.

 # ..... # self-study portion.

Text Book:

L.M.Prasad, *Organizational Behavior*, Sultan Chan and Sons, 1998

UNIT I: Chapter 1,3
UNIT II: Chapter 4 – 6
UNIT III: Chapter 7,9,21
UNIT IV: Chapter 13,16
UNIT V: Chapter 17,24,25

Books for Reference

Fred Luthans,Organizational Behavior, Tata McGraw Hill Education (P)Limited 12th edition, 2013.

SEMESTER - III :CORE III
VISUAL PROGRAMMING

Course Code: 14UCA3C3 **Max. Mark : 100**
Hours/week : 5 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective :

To understand the concepts of Visual Basic and to develop simple applications.

UNIT-I **15 hours**

Visual Basic Definition –Features of Visual Basic – The Visual Basic Philosophy – Developing an Application – Integrated Development Environment (IDE) Features – Anatomy of a form– What does Visual Basic 6 have for you to create applications? – #Working with a Control# – Opening the Course Code Window.

UNIT-II **15 hours**

Variables in Visual Basic: Declaring variables – Data types – Null value – Error value – Empty value – The scope of the variable – Module level variables –Constants – Creating your own constants – Scope of a constants– Arrays –#Multidimensional arrays# – Dynamic arrays.

UNIT -III **15 hours**

Writing Course Code in Visual Basic: – The Course Code Window – The Anatomy of a Procedure – Editor Features – For….Next Statement – Decision Maker….If – Loop – While Loop – Select Case… End Select –Visual Basic File System Controls: – Types of Files – #Working with Files#.

UNIT-IV **15 hours**

Menus: – Building the User Interface – All about Menus – MDI: Multiple Document Interface Applications – Features of an MDI Form – Loading MDI Forms and Child Forms – Debugging Tips – The Debugging Methods – The Common Dialog Control.

UNIT-V **15 hours**

Introduction to Databases –Database Access – Working with the Data Control–Coding –Data Access Objects – The Jet Data Base Engine – Functions of the Jet Database Engine – #SQL# – The DAO Object Model.

 # ..... # self-study portion.

Text Book:

Mohamed Azam, *Programming with Visual Basic 6.0,* Vikas Publishing House Pvt. Ltd., 2005.

UNIT I: Chapter 1 – 3
UNIT II: Chapter 4
UNIT III: Chapter 5 & 6
UNIT IV: Chapter 7 – 10
UNIT V: Chapter 11 – 13

Books for Reference:

Gary Cornell, *visual basic 6 from the Ground Up*, Tata McGraw Hill Edition, 2006.

SEMESTER - III : MAJOR BASED ELECTIVE – III

VISUAL PROGRAMMING LAB

Course Code: 14UCA3M3P **Max. Marks :100**

Hours/week : 3 **Internal Marks : 40**

Credit : 3 **External Mark : 60**

1.Program to create addition, subtraction, multiplication and division using standard control.

4 hours

2. Program to find your age using date calculator.

4 hours

3. Program to scroll a text from left to right and right to left of the client area using timer control.

(3 Hours)

4. Program to design a calendar of a year.

(3 Hours)

5. Program to design and implement a scientific calculator.

(3 Hours)

6. Program to expand and shrink objects using timer control.

4 hours

7. Program to create and design the different shapes control.

4 hours

8. Program to create animation using timer control.

4 hours

9. Program to create and design a traffic signal using timer control.

4 hours

10. Program to populate the employee details using Data Control.

4 hours

11. Program to prepare a student's mark list using Data Control.

4 hours

12. Program to prepare an invoice report using Data Control.

4 hours

SEMESTER - III: NON MAJOR ELECTIVE II
INTERNET AND ITS APPLICATIONS

Course Code : 14UCA3N2 **Max. Marks : 100**
Hours/week : 2 **Internal Marks : 40**
Credit : 2 **External Mark : 60**

Objective:

To understand the fundamental concepts of Internet and its Applications.

UNIT-I **6 hours**

Introduction to the Internet: Computers in Business – Networking – Internet – Electronic Mail – Resource Sharing – Gopher – World Wide Web – Usenet – #Telnet# – Bulletin Board Service – Wide Area Information Service .

UNIT-II **6 hours**

Internet Technologies: Modem – Internet Addressing – Physical Connections – Telephone Lines. Internet Browsers: Internet Explorer – #Netscape Navigator#.

UNIT-III **6 hours**

Introduction to HTML: Designing a Home Page – History of HTML – HTML Generations – HTML Documents – #Anchor Tag# – Hyper Links.

UNIT-IV **6 hours**

Head and Body Sections: Header Section – Title – Prologue – Links – Colorful Webpage. Designing the Body Section: Heading Printing – Aligning the Headings.

UNIT-V **6 hours**

Ordered and Unordered Lists: Lists – Unordered Lists – Ordered Lists Table Handling: Tables – Table Creation in HTML – #Width of the Table and Cells#.

 # ..... # self-study portion.

Text Book

C Xavier, *World Wide Web design with HTML*,Tata McGraw-Hill Education, 2000.

UNIT I : Chapter 1 Section (1.1 -1.6), Section 2(2.2 – 2.4)
UNIT II: Chapter 4 Section (4.1 – 4.6)
UNIT III: Chapter 5 Section (5.1 – 5.5)
UNIT IV: Chapter 6 Section (6.1 -6.10)
UNIT V : Chapter 7 Section (7.1 – 7.6)

Books for Reference

1. Deitel and Deitel, *Internet and World Wide Web - How to Program*, PHI, Fourth Edition, 2008.

SEMESTER - IV :ALLIED-IV (A)
PRINCIPLES OF ACCOUNTANCY

Course Code : 14UCA4A4	**Max. Marks : 50**
Hours/week : 4	**Internal Marks : 20**
Credit : 2	**External Mark : 30**

Objective:

To provide the basic knowledge of the financial accounting including double entry book keeping, preparation of journal, subsidiary book, ledger, trial balance and balance sheet.

UNIT-I **12 hours**

Meaning of Accounting – Meaning and Objects of Book Keeping – Accounting Concepts and Conventions – #Principles of Double Entry# – Kinds of Account – Journal and Ledger Accounts.

UNIT-II **12 hours**

Subsidiary Books – Purchase Book, Sales Book, Purchase Returns Book, Bills Receivable Book, Bills Payable Book, Cash Book, Analytical Petty Cash Book and Journal Proper – Bank Reconciliation Statement.

UNIT-III **12 hours**

Trail Balance –# Preparation# – Errors Disclosed and Errors Not Disclosed by its Suspense Account – Rectification of Errors.

UNIT-IV **12 hours**

Preparation of Final Accounts – Trading Account, Profit and Loss Account, Balance Sheet – Adjusting and Closing Entries.Methods of Depreciation (Fixed Percentage on Original Cost Method and Diminishing Balance Method Only)

UNIT-V **12 hours**

Bills of Exchange – #Bill Transaction, Discounting Endorsement# – Sending Bill for Collection, Noting of a Bill, Renewal of a Bill – Insolvency of Acceptor.

80% - Problems 20% - Theory

 # ..... # self-study portion.

Text Book:

1. N. Vinayakam, P.L. Mani, K.L. Nagarajan, *Principles of Accountancy*, EURASIA Publishing House (PVT) Ltd., New Delhi, Revised Edition, 2002.
2. T.S. Grewal, Introduction to Accountancy, S.Chand& Company Pvt. Ltd.

UNIT I : Chapter 1 & 2
UNIT II: Chapter 3 & 7
UNIT III: Chapter 4
UNIT IV: Chapter 6
UNIT V: Chapter 8

Books for Reference

M.C. Shukla, T.S. Grewal, *Advanced Accounts*,Eleventh Edition,S.Chand& Company(Pvt). Ltd,Reprinted, 1988

SEMESTER - IV :ALLIED - IV (B)

TALLY LAB

Course Code: 14UCA4A4P **Max. Marks : 50**
Hours/week :2 **Internal Marks : 20**
Credit : 2 **External Mark : 30**

1. Architecture and customization of Tally

(2 Hours)

2. Configuration of Tally

(2 Hours)

3. Tally Screens and Menus

(2 Hours)

4. Creation of new company and groups.

(2 Hours)

5. Preparation of voucher entries.
    a. Payment voucher
    b. Receipt voucher
    c. Sales voucher
    d. Purchase voucher
    e. Contra voucher
    f. Journal voucher

(12 Hours)

6. Ledger Creation

(2 Hours)

7. Preparation of Trail balance

(2 Hours)

8. Preparation of Profit and loss statement.

(2 Hours)

9. Preparation of Balance Sheet.

(2 Hours)

10. Preparation of Bank Reconciliation Statement

(2 Hours)

SEMESTER - IV :CORE IV
DIGITAL ELECTRONICS

Course Code : 14UCA4C4 **Max. Marks:100**
Hours/week : 5 **Internal Marks : 40**
Credit : 4 **External Mark: 60**

Objective:

To understand the principles of digital logic circuits and their design.

UNIT-I **15 hours**

Number Systems and Course Codes: Binary Number System – Binary to Decimal Conversion – Decimal to Binary Conversion – Octal Numbers – Hexadecimal Numbers. Arithmetic Circuits: Binary Addition – Binary Subtraction – Binary Multiplication and Division –#Binary Course Codes# – Decimal Course Codes - Error-Detection Course Codes – Alphanumeric Course Codes.

UNIT-II **15 hours**

Digital Logic: The Basic Gates - NOT, AND, OR - Universal Logic Gates – NOR, NAND - Positive and Negative Logic – Combinational Logic Circuits: Boolean Laws And Theorems – Sum-of-Products Method – Karnaugh Simplifications - Don't Care Conditions – Product-of-Sum Method – Product-of-Sums Simplification.

UNIT-III **15 hours**

Data Processing Circuits: Multiplexers – Demultiplexers – 1-to-16 DeCourse Coders – BCD-to-decimal DeCourseCoders -EnCourse Coders. Combinational Logic : Introduction – Adders – #Subtractors# – Binary Parallel Adder.

UNIT-IV **15 hours**

Sequential Logic Circuits: Flip Flops – RS Flip Flops – Edge -triggered RS Flip Flops – Edge -triggered D Flip Flops – Edge -triggered JK Flip-flops – JK Master-slave Flip-flops. Registers: Types – Serial In-Serial Out - #Serial In-Parallel Out#.

UNIT-V **15 hours**

D/A and A/D Conversion – Variable Resistor Network – Binary Ladder – D/A Converter – D/A Accuracy and Resolution – A/D Converters – Simultaneous Method – Counter Method – Successive Approximation Method.

 # ..... # self-study portion.

Text Book:

1. Donald P Leach, Albert Paul Malvino, GoutamSaha,*Digital Principles And Applications*, Sixth Edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2006.

UNIT I:Chapter 5 & 6
UNITII: Chapter 2 & 3
UNITIII: Chapter 4
UNIT IV: Chapter 8 & 9
UNIT V: Chapter 12

2. M. Morris Mano, *Digital Logic and Computer Design*, Prentice-Hall of India Private Limited, New Delhi, 1979. (Unit III – Chapter 4)

Books for Reference:

Albert Paul Malvino and Donald P. Leach, *Digital Principles and Applications*, Tata McGraw Hill, Fourth Edition, 1996.

SEMESTER - IV :CORE-V

DATA STRUCTURES

Course Code : 14UCA4C5 **Max. Marks : 100**
Hours/week : 5 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To understand the concepts of data structures and algorithms.

UNIT–I **15 hours**

Introduction and Overview: Introduction – Basic Terminology; Elementary Data Organization – Data Structures – Data Structure Operations – Arrays: Introduction – Linear Arrays – Representation of linear arrays in memory – Insertion and Deletion – Sorting: bubble sort - Searching: Linear Search – #Binary Search#.

UNIT–II **15 hours**

Linked lists: Introduction – Linked Lists – Representation of Linked List in Memory– Traversing a Linked List – Searching a Linked List– Memory Allocation; Garbage Collection – Insertion into a Linked List – Deletion from a Linked List- #Two – way Lists#

UNIT–III **15 hours**

Stacks, Queues and Recursion: Introduction– Stacks – Array and Linked Representations of Stacks – Arithmetic Expressions; Polish Notation – Recursion: Towers of Hanoi –Queues: Array representation of Queue - Linked representation of Queue – Deques.

UNIT–IV **15 hours**

Trees: Introduction – Binary Trees– Representing Binary Tress in Memory – Traversal Algorithms using Stacks – Binary Search Trees – Searching and Inserting in Binary Search Tress – Deleting in Binary Search Trees – Sorting: Introduction – #Insertion Sort# – Selection Sort-Quick Sort – Heap Sort.

UNIT–V **15 hours**

Algorithms analysis: Introduction – Problem solving: Categories of problem solving – Problem solving strategies. Modular Design: Bottom-up Design – Top-down Design. Implementation of Algorithm – Choice of Data Structure – Common Errors in implementation – Testing.

 # ..... # self-study portion.

Text Books:

1. SeymourLipschutz, *Data Structures*, Tata McGraw – Hill Publishing Company Limited, New Delhi, 2006. (Unit I, II, III, IV)
2. A. Chitra and P.T. Rajan, Data Structures, Tata McGraw – Hill Publishing Company Limited, New Delhi, 2006. (Unit - V)

UNIT I: 1.1 – 1.10, 4.1 – 4.8 UNIT II: 5.1- 5.10
UNIT III: 6.1 – 6.12 UNIT IV: 7.1 – 7.9
UNIT V: 9 – 16

Books for Reference

Jean Paul Tremblay and Paul G. Sorenson, *An Introduction To Data StructuresWith Applications*,Tata McGraw-Hill , Second Edition,2011.

SEMESTER - IV: EXTRA CREDIT –I
DESIGN AND ANALYSIS OF ALGORITHMS

Course Code: 14UCA4EC1 **Max. Marks : 100*Hours/week : NIL**
Internal Marks : --
Credit : 4* **External Marks : 100***

UNIT-I

Introduction: Algorithm Definition – Algorithm Specification – Performance Analysis. Elementary Data Structures: Stacks and Queues – #Trees# – Dictionaries – Priority Queues – Sets and Disjoint Set Union – Graphs

UNIT-II

Divide and Conquer:The General Method – Defective Chessboard – Binary Search – Finding The Maximum and Minimum – #Merge Sort# – Quick Sort – Selection - Strassen's Matrix Multiplication.

UNIT-III

The Greedy Method: General Method - Container Loading - Knapsack Problem - Tree Vertex Splitting – Job Sequencing With Deadlines - Minimum Cost Spanning Trees - Optimal Storage On Tapes – Optimal Merge Patterns - #Single Source Shortest Paths#.

UNIT-IV

Dynamic Programming: The General Method – Multistage Graphs – All-Pairs Shortest Paths – Single-Source Shortest Paths - Optimal Binary Search Trees - String Editing - 0/1 Knapsack - Reliability Design - The Traveling Salesperson Problem - Flow Shop Scheduling.Basic Traversal and Search Techniques: Techniques for Binary Trees – Techniques for Graphs – Connected Components and Spanning Trees – Biconnected Components and DFS.

UNIT-V

Backtracking: The General Method – The 8-Queens Problem – Sum of Subsets – Graph Coloring – Hamiltonian Cycles – Knapsack Problem BranchAnd Bound: The Method - 0/1 Knapsack Problem.

 # ..... # self-study portion.

Text Book

Ellis Horowitz, SatrajSahni and SanguthevarRajasekaran, *Fundamentals of Computer Algorithms*, Universities Press, Second Edition, Reprint 2009.

Unit I: Chapter 1, Chapter 2 Unit II: Chapter 3 Unit III: Chapter 4
Unit IV: Chapter 5 & 6 Unit V: Chapter 7

Books for Reference

A.A.Puntambekar, Analysis and Design Of Algorithms, Technical Publications, 2008

SEMESTER - IV : EXTRA CREDIT – II
MICROPROCESSORS

Course Code : 14UCA4EC2 **Maximum Marks : 100***
Hours/Weeks: NIL **Internal Marks :**
Credit : 4* **External Marks :100***

Objective:

To understand the basic principles of microprocessor architecture & its pin configuration. To write simple assembly language programs. To understand the concepts of memory and I/O interfacing.

UNIT-I

Word Length of a Microprocessor – Evolution of Microprocessors – Single Chip Microcontrollers – Embedded Microprocessors – Hardware, Software and Firmware – Central Processing Unit – Memory – Buses – Processing Speed of a Computer – Classification of Computers – Von Neumann Architecture – Harvard Architecture – Data Flow Architecture – Types of Microprocessors – Microprocessor Applications.

UNIT-II

Intel 8085 Microprocessor Architecture – Register – Status Flags – Pin Configuration – OpCourse Code and Operands – Instruction Formats (Word Size) – Instruction Cycle – Fetch Operation – Execute Operation – Timing Diagram – #Memory Read# – Memory Write – Addressing Modes.

UNIT-III

Instruction Set of 8085 – Data Transfer Instructions – Arithmetic Instructions – Logical Instructions – Shift and Rotate Instructions – Branch Instructions – Jump, Call and Return – Stack Instructions – I/O, Machine Control and other Instructions –#Assembly Language# – Assemblers – Stacks – Subroutines – Macros.

UNIT-IV

Assembly Language Programs – Addition, Subtraction, Multiplication and Division of 8-bit numbers – Decimal Addition and Subtraction – Multibyte Addition and Subtraction – 1's and 2's Complements – Assembly and Disassembly of a Byte – Sum of a Series – Block Data Transfer – Finding the Smallest and the Biggest Number in an Array – Arranging a Series of Numbers in Descending and Ascending Order.

UNIT-V

Peripheral Devices and Interfacing – Address Space Partitioning – Memory and I/O Interfacing – Data Transfer Schemes – Interrupts of Intel 8085 – Interfacing Devices and I/O Devices – I/O Ports – Programmable Peripheral Interface (8255) – #Programmable DMA Controller (8257)# – Delay Subroutines – Seven-Segment Displays – Types of Seven-Segment Displays – Interfacing Seven-segment Displays.

 # ..... # self-study portion.

Text Book

Badri Ram, *Fundamentals of Microprocessors and Microcomputers*, DhanpatRai Publications, Sixth Revised and Enlarged Edition, 2010.

Unit I: Chapter 1 Unit II: Chapter 4 Unit III: Chapter 5 Unit IV:ChapterUnit V: Chapter 7

Books for Reference

Ramesh Gaonkar, Microprocessor Architecture, Programming and Applications with 8085, Prentice Hall of India, Fifth Edition, 2002.

SEMESTER - V :CORE-VI
JAVA PROGRAMMING

Course Code: 14UCA5C6 **Max. Marks : 100**
Hours/week : 5 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To understand the basic concepts of object oriented programming with Java language

UNIT-I **15 hours**

The creation of Java – The Byte Course Code – The Java Buzzwords – Object Oriented Programming – Data Types – Variables – Arrays - Operators – Control Statements – Introducing Classes: Class fundamentals – Declaring objects – Introducing Methods – Constructors – 'this' keyword – Garbage Collection – Overloading Methods – #Recursion# - Understanding static - Introducing final.

UNIT-II **15 hours**

Inheritance: Inheritance Basics - Member Access and Inheritance - Using super - Method Overriding-Using Abstract Classes - #Packages# - Defining a Package – Access Protection – Importing Packages – Interfaces: Defining an Interface - Implementing Interfaces - Interfaces Can Be Extended.

UNIT-III **15 hours**

Exception Handling: Exception-Handling Fundamentals - Using try and catch - Multiple catch Clauses - Nested try Statements - throw - throws - finally - Creating Your Own Exception Subclasses. Multithreaded Programming: The Thread Class and the Runnable Interface – The Main Thread – Creating thread - Implementing Runnable Interface - Extending Thread - Thread Priorities – Synchronization – #String Handling#.

UNIT-IV **15 hours**

The Java I/O Classes: File - Directories - The Byte Streams: Input Stream – Output Stream – FileInputStream – FileOutputStream – SequenceInputStream. The Character Stream: Reader – Writer – FileReader – FileWriter – PrintWriter. Networking: Networking Basic – InetAddress – TCP/IP Client Sockets - #TCP/IP Server Socket#.

UNIT-V **15 hours**

The Applet Class: Applet Skeleton - The HTML APPLET Tag - Passing Parameters to Applets. Event Handling: The Delegation Event Model – Event Classes: ActionEvent – KeyEvent – FocusEvent. Event Listener Interfaces: The ActionListener Interface - The KeyListener Interface. Introducing the AWT: AWT classes – Window Fundamentals – Working with Frame windows - Working with Graphics - AWT Controls: Labels - Buttons - Check Boxes – CheckboxGroup - TextField – TextArea. Layout Managers: FlowLayout- BorderLayout – GridLayout.

15 hours

 # ..... # self-study portion.

Text Book: Herbert Schildt, The Complete Reference of Java, Fifth Edition, 2002.

UNIT I : Part I (1,2,3,4,5,6) UNIT II : Part I (8,9)
UNIT III: Part I (10,1 1) & Part II (13) UNIT IV: Part II (17,18)
UNIT V : Part II (19, 20, 21, 22)

Books for Reference:P. Radha Krishna, *Object Oriented Programming through JAVA*, Universities Press, 2007.

SEMESTER – V :CORE-VII
DATABASE MANAGEMENT SYSTEMS

Course Code : 14UCA5C7 **Max. Marks :100**
Hours/week :4 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To provide the concepts of database management systems and RDBMS including transaction management and concurrency control.

UNIT-I **12 hours**

Introduction to Database Management Systems: File Based Data Management – Functions of DBMS – Components of DBMS – Database Users. Database Architecture and Design: Data Abstraction – Data Independence – #Database Languages# – Database Design – Design Constraints. Data Models: Hierarchical Data Model, Network Data Model, Relational Data Model, E-R Model: E-R Components, E-R Relationships, Types of E-R Diagrams, Object-oriented Models.

UNIT-II **12 hours**

RDBMS: Terminology – Relational Data Structure – Data Normalization – Pitfalls in Relational Database Design – Decomposition – #Functional Dependencies# – Normalization – Keys – FirstNormal Form(INF), Second Normal Form(2NF), Third Normal Form(3NF), Boyce-Codd Normal Form(BCNF) and Fourth Normal Form(4NF). Relational Algebraic Operations –Relational Calculus: Tuple Relational Calculus, Domain Relational Calculus.

UNIT-III **12 hours**

SQL: Characteristics of SQL – Advantages of SQL – Types of SQL Commands – SQL Operator.Tables and Views – #Queries and Subqueries# – Aggregate Functions –INSERT, UPDATE and DELETE operations.

UNIT-IV **12 hours**

Files, File Organization and File Structures: Operations on Files – File Storage Organization – Physical Storage Media – File Structure – Record Types. Indexing and Hashing – Database Security: Data Security Risks – Data Security Requirements – GRANT, REVOKE command –Data Encryption – Network Security.

UNIT-V **12 hours**

Transaction Management and Concurrency Control : Transactions – ACID Properties – Transaction States – Concurrency Control – Serializability – Recoverability – Concurrency Control Schemes – Transaction Management in SQL – #Transactions and Recovery# – User-defined Transactions – The COMMIT, ROLLBACK and SAVEPOINT Commands – Backup and Recovery.
 # ..... # self-study portion.

Text Book:

Alexis Leon & Mathews Leon, *Essentials of Database Management Systems*, McGraw-Hill Education (India) Pvt. Limited, 2009
UNIT I –Chapters: 1(1.3,1.8–1.9,1.11),Section 2(2.3,2.5–2.8), Section3 (3.4– 3.8), Section4 (4.3–4.5,4.8)
UNIT II–Chapters: 6(6.2–6.3),Section8(8.2–8.6, 8.8–8.12),Section9 (9.2), Section10(10.2–10.3)
UNIT III–Chapters: 12(12.2 – 12.5),Section13(13.1– 13.2),Section14(14.1–14.2), 15,16
UNIT IV –Chapters: 20(20.2–20.4,20.9–20.10),Section21(21.2–21.3),Section22(22.3,22.5,22.8,22.9,22.13)
UNIT V -Chapters: 23(23.2–23.3,23.5–23.15),Section24(24.2–24.7, 24.8–24.13)
Books for Reference: RajeshNarang, *Database Management Systems*. PHI Learning (P) Ltd, New Delhi, 4th Printing 2009

SEMESTER - V: CORE - VIII
OPERATING SYSTEMS

Course Code : 14UCA5C8 **Max. Marks : 100**
Hours/week : 4 **Internal Marks : 40**
Credit : 4 **External Marks : 60**

Objective:

To provide fundamental concepts of all managements in an operating system.

UNIT-I **12 hours**

Introduction: What is an Operating System – Mainframe Systems – Multiprocessor Systems - Distributed System – Handheld Systems. Operating System Structures: System Components – Operating System Services - #System Programs# – System Structure-: Layered Approach.

UNIT-II **12 hours**

Memory Management: Single Contiguous Allocation – Example of Multiprogramming – Partitioned Memory Management – #Paged Memory Management# – Demand Paged Memory Management – Segmented Memory Management.

UNIT-III **12 hours**

Processor Management: Job Scheduling – Functions – Job Scheduling in Non-Multiprogrammed Environment – Job Scheduling in Multiprogrammed Environment – Process Scheduling Functions – Policies – Process Synchronization – Deadlocks: Deadlock Characterization – Deadlock Avoidance – Recovery from Deadlock.

UNIT-IV **12 hours**

Device Management: Techniques for Device Management – Device Characteristics – Hardware Considerations – Channels – Control Units – #I/O Traffic Controller# – I/O Scheduler – I/O Device Handler.

UNIT-V **12 hours**

File Management: File-System Interface: File Concept – Access Methods – Directory Structure: Single Level Directory – Tree-Structured. File-System Implementation: Overview– Directory Implementation – #Allocation Methods#.

 # ..... # self-study portion.

Text Books:

1. Stuart E. Madnick& John J. Donovan, *Operating Systems*, McGraw Hill International Editions, 1997. (Unit II, III, IV)
2. Abraham Silberschatz and Galvin Milan, *Operating System Concepts,* Sixth Edition,John Wiley & Sons, 2006.(Unit I, III, V)
   UNIT I: Chapter 1 (1.1, 1.2 , 1.4, 1.5, 1.8) Chapter 3(3.1, 3.2,3.4, 3.5)
   UNIT II: Chapter 3
   UNITIII: Chapter 4, Chapter 8 (8.2, 8.5, 8.7)
   UNITIV: Chapter 5
   UNITV: Chapter 11(11.1 – 11.3), Chapter 12 12.2 , 12.4)

Books for Reference:

Charles Crowley, *Operating Systems – A Design Oriented Approach*, IRWIN Publication, 1997.

SEMESTER - V :CORE – IX
MULTIMEDIA TECHNOLOGY

Course Code: 14UCA5C9 **Max. Marks :100**
Hours/week : 4 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To provide a sound knowledge in various concepts of Multimedia and its applications.

UNIT-I **12hours**

Multimedia: Introduction – Use of Multimedia – Virtual Reality – Kiosk – Use of Public Places – Railway Stations – #Bank ATM's# – Delivering Multimedia – CD, DVD, Flash Drives.

UNIT-II **12hours**

Text: Fonts – Faces – Designs – HTML – Images – Capture – Types of Images – BMP, JPG, GIF, and PNG – #Vector Drawing# – 3D Drawing, Rendering.

UNIT-III **12hours**

Audio: Digital Audio – MIDI Audio – Audio File Formats – Video: Analog – Digital – LED, LCD, Plasma, Screen Touch – #Video Clipping# – Video Tips.

UNIT-IV **12hours**

Multimedia Skills: Creativity – User – Administrator – Multimedia Team – Project Manager – Designer – Writer – Director – Video, Audio Specialist –Programmer.

UNIT-V **12hours**

Multimedia Project: Design – Organization – Communication – Text Editing – OCR – Painting, Drawing – Image and Sound Editing – Animation – Authoring Tools – Multimedia Planning – Costing – Designing – Producing.

 # ..... # self-study portion.

Text Books:

1. Tay Vaughan , *Multimedia Making it Work*, Tata McGraw – Hill Edition , Fourth Edition, 2000.

2. David Hillman, *Multimedia Technology and Applications*, Galgotia Publications Pvt. Ltd., 1998.

Books for Reference:

Fred T.Hofstetter, *Multimedia Literacy*, McGraw Hill, 1995

SEMESTER - V :CORE - X
JAVA PROGRAMMING LAB

Course Code : 14UCA510P **Max. Marks :100**
Hours/week : 4 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

1. Simple Programs using control statements:
    a. To reverse the number using while and do… while loop.
    b. To find the smallest and biggest number of given numbers using array.

    4 hours
2. Write a java program to ncr value of given numbers using recursive function.

    4 hours
3. Write a java program to find volume of rectangle and triangle using inheritance.

    4 hours
4. Write a java program to prepare EB-bill using packages.

    4 hours
5. Write a java program to demonstrate interface concept.

    4 hours
6. Write a java program to create multiple threads using Thread class.

    4 hours
7. Write a Java program to demonstrate various methods in the String handling methods.

    4 hours
8. Write a Java program to implement the concept of Exception Handling.

    4 hours
9. Write a java program to demonstrate File class.

    4 hours
10. Write java program using Stream classes.
    a. To display all sub directories and files of given path.
    b. To concatenation of two files.
    c. To copy the one file into another.

    6 hours
11. Write a java program to find the IP address of the machine.

    4 hours
12. Write a java program to send a message and reply the same path using Sockets.

    4 hours
13. Write a java program using Applet
    a. To display text on applet window.
    b. To display basic shapes and fill them and set background and foreground colors

    6hours
14. Develop a java program for simple calculator using AWT controls.

    4 hours

SEMESTER - V :CORE - XI

E-COMMERCE

Course Code : 14UCA5C11 **Max. Marks :100**
Hours/week : 4 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To acquire the knowledge in Electronic Commerce, Electronic Payment systems, Security systems, Online Advertising and Marketing.

UNIT-I **12 hours**

Introduction to Electronic Commerce: Electronic Commerce Framework – Electronic Commerce and Media Convergence – The Anatomy of E-Commerce Applications – Electronic Commerce Consumer Applications – #Electronic Commerce Organization Applications#.

UNIT-II **12 hours**

The Network Infrastructure for Electronic Commerce:Components of the I-way – Network Access Equipment.The Internet as a Network Infrastructure :– NSFNET Architecture and components – National Research and Education Network – The Business of Internet Commercialization : Telco/Cable/On-Line Companies – #National Independent ISPs# – Regional Level ISPs – Local-level ISPs .

UNIT-III **12 hours**

Electronic Commerce and the World Wide Web: Architectural Framework for Electronic Commerce – World Wide Web as the Architecture – Technology behind the Web – Security and the Web. Consumer-Oriented Electronic Commerce: Consumer-Oriented Applications – Mercantile Process Models.

UNIT-IV **12 hours**

Electronic Payment Systems: Types of Electronic Payment Systems – Digital Token-based Electronic Payment Systems – Smart Cards and Electronic Payment Systems – Credit Card-Based Electronic Payment Systems – #Risk and Electronic Payment Systems# – Designing Electronic Payment Systems.

UNIT-V **12 hours**

Inter-organizational Commerce and EDI:Electronic Data Interchange – EDI Applications in Business.Advertising and Marketing on the Internet: The New Age of Information-Based Marketing – Advertising on the Internet – #Charting the On-Line Marketing Process# – Marketing Research. Consumer Search and Resource Discovery: Information Search and Retrieval – Information filtering.

 # ..... # self-study portion.

Text Book:

Ravikalakota& Andrew Whinston, Frontiers of Electronic Commerce,Pearson Edition, India,2009.
UNIT I: Chapter 1(1.1 – 1.5) UNIT II: Chapter 2(2.2,2.3), 3(3.3,3.4), 4(4.1 – 4.4)
UNIT III: Chapter 6 (6.1,6.2,6.4,6.5), 7(7.1,7.2)
UNIT IV: Chapter 8(8.1 – 8.6) UNIT V: Chapter 9 (9.1,9.2), 13(13.1 - 13.4), 14(14.2,14.4)

Books for Reference:

Munesh Chandra Trivedi, Electronic Commerce, Jaico Publishing House, 3rd Edition, 2006.

SEMESTER - V : MAJOR BASED ELECTIVE – IV

DATA STRUCTURES LAB

Course Code : 14UCA5M4P **Max. Marks : 100**

Hours/week : 3 **Internal Marks : 40**

Credit : 3 **External Mark : 60**

Write C programs to implement the following:

1. Bubble Sort.
   4 hours
2. Selection Sort.
   4 hours
3. Insertion Sort
   4 hours
4. Quick Sort.
   4 hours
5. Searching (Linear Search, Binary Search)
   6 hours
6. Multidimensional Arrays (Matrix Operations, Addition and Multiplication)
   6 hours
7. Fibonacci Series using Recursion.
   4 hours
8. Stack Operations using Arrays.
   4 hours
9. Queue Operations using Arrays.
   4 hours
10. Singly Linked List Operations.
    5 hours

SEMESTER - V :SKILL-BASED ELECTIVE – III

WEB DESIGN

Course Code : 14UCA5S3 **Max. Marks : 100**
Hours/week : 2 **Internal Marks : 40**
Credit : 2 **External Mark : 60**

Objective

To understand the concepts of Web and various Scripting languages.

UNIT-I **6 hours**

Introduction – What is Internet? – History of Internet – Internet Services and Accessibility – Uses of the Internet – Protocols – #Web Concepts# – Internet Protocols:Internet Protocols – Host Names – Application Protocols: Datagram vs Stream – TFTP –FTP – Telnet – HTTP.

UNIT-II **6 hours**

HTML: Introduction – SGML – Outline of an HTML Document – Head Section – Body Section – HTML Forms.

UNIT-III **6 hours**

JAVASCRIPT: Introduction – #Language Elements# – Objectives of JavaScript – Other Objects – Arrays.

UNIT-IV **6 hours**

VBSCRIPT: Introduction – Embedding VBScript in an HTML Document – Comments – Variables – Operators – Procedures – Conditional Statements –# Looping Constructs# –Objects and VBScript – Cookies.

UNIT-V **6 hours**

DHTML: Introduction – CSS – DHTML Document Object Model and Collections – Event Handling – Filters and Transitions –# Data Binding#.

Text Book

N.P.Gopalan, J. Akilandeswari, *Web Technology A Developer' Perspective*, PHI, Fourth Edition, 2010.

Unit I: Chapter 1: 1.1 – 1.6, Chapter 2: 2.2, 2.3, 2.4 (2.4.1- 2.4.5)
Unit II: Chapter 4: 4.1 - 4.6 Unit III: Chapter 5: 5.1-5.5
Unit IV: Chapter 6: 6.1 -6.10 Unit V: Chapter 7: 7.1 – 7.6

 # ..... # self-study portion.

Books for Reference:

Deitel and Deitel, *Internet and World Wide Web - How to Program*, PHI, Fourth Edition, 2008.

SEMESTER - V : EXTRA CREDIT-III
ENTERPRISE RESOURCE PLANNING

Course Code : 14UCA5EC3 **Max. Marks : 100***
Hours/week : - **Internal Marks : --**
Credit : 4* **External Mark : 100***

UNIT-I

A Foundation for Understanding Enterprise Resource Planning Systems: The Emergence of Enterprise Resource Planning Systems – Business Benefits of ERP – ERP Modules – ERP Design Alternatives. Re-engineering and Enterprise Resource Planning Systems: Business Process Re-engineering – Process Modeling – #Re-engineering at Reliable Finance Company#.

UNIT-II

Planning, Design, and Implementation of Enterprise Resource Planning Systems: Traditional Systems Development – new Approaches to Systems Development – The ERP Systems Development Process – ERP Implementation Steps. ERP Systems: Sales and Marketing - Atlantic Manufacturing – #Management Control Processes in Sales and Marketing# – ERP and Customer Relationship Management.

UNIT-III

ERP Systems: Accounting and Finance: Management Control Processes in Accounting – Accounting and Finance Modules IN ERP Systems – the New Role for Management Accounting. ERP Systems: Production and Materials Management – Production Planning and Manufacturing Processes –#Management Control Processes in Production and Manufacturing# – Production Planning and Manufacturing Modules in ERP Systems – Materials Management Modules in ERP Systems.

UNIT-IV

ERP Systems: Human Resources – Human Resources Data Administration – Compensation and Benefits Administration – Human Resources Information Systems – Human Resources Modules in ERP Systems – Integration of HR Modules with Other Modules. Managing an ERP Project: Risk Factors in Information Systems Projects – Risks in Implementing an ERP System – Managing Large-Scale ERP Projects – Project-Related Factors.

UNIT-V

Supply Chain Management and the e-Marketplace: Supply Chain Management – e-Business and ERP – e-Supply Chain and ERP – Business Intelligence with ERP – Future Directions for ERP.

 # ..... # self-study portion.

Text Book:
Mary Sumner. Enterprise Resource Planning, Pearson Education India, 2006.

Unit I: Chapter 1 & 2 Unit II: Chapter 3 & 4 Unit III: Chapter 5 & 6
Unit IV: Chapter 7 & 8 Unit V: Chapter 9

Books for Reference:
Rajesh Roy, Enterprise Resource Planning, Tata McGraw Hill Education, 2010.

SEMESTER - VI :CORE- XII

COMPUTER GRAPHICS

Course Code : 14UCA6C12 **Max. Marks : 100**
Hours/week : 5 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To impart knowledge on the basics of Graphic Devices, 2-D, 3-D Transformations, Clipping and Windowing concepts.

UNIT-I **15 hours**

Introduction to Computer Graphics: Computer Art, Entertainment, Education &Training, Visualization, Image Processing, Graphical User Interface. Display Devices: Refresh Cathode Ray Tube, Raster-Scan Displays, Random- Scan Displays, Color CRT Monitors, Direct View Storage Tubes, Flat-Panel Displays, Three Dimensional Viewing Devices. Input Devices: Keyboards, Mouse, Joysticks, Lightpens, Touch Panels.Hard-#Copy Devices#. Graphics Software: Graphics Functions, Software Standards.

UNIT-II **15 hours**

Output Primitives: Points and Lines–Line Drawing Algorithms: DDA algorithm, Bresenham's linealgorithms,circle-generating algorithms.Fill Area Functions –#Character Generation# – Attributes of OutputPrimitives:Line Styles: LineType, Line Width, Line Color.Color and Intensity:Color Table, Color Lookup Table**.**Character Attribute: TextAttribute,Marker Attribute. Bundled Attributes: BundledLine,Bundled Area-Fill,BundledText,BundledMarker .Inquiry Functions.

UNIT-III **15 hours**

Two-Dimensional Transformations:Basic Transformations- Translation, Rotation, Scaling. Matrix Representations and Homogeneous Co-ordinates – Composite Transformations:Translations, Rotation, Scaling, General Pivot-Point Rotation, General Fixed-Point Scaling. Other Transformations: Reflection, Shear.Two-Dimensional Viewing: The Viewing pipeline, Window-to-Viewport coordinate transformation. Clipping Operations:Point clipping, Cohen-Sutherland line clipping algorithm, Text clipping.

UNIT-IV **15 hours**

Segments: Segment Concepts –#Segment Files# – Segment Attributes – Segment Function. Interactive Input Methods: Logical Classifications of Input Devices , Locator Devices, Stroke Devices, String Devices, Valuator Devices , Choice Devices, Pick Devices. Interactive Picture Construction Techniques: Basic Positioning Methods, Constraints, Grids, Rubber band Method, Dragging, Painting and Drawing.

UNIT-V **15 hours**

Three Dimensional Concepts: Three Dimensional Coordinate Systems – Three Dimensional Display Techniques – Three Dimensional Graphics Packages – #Applications of Computer Graphics#.

 # ..... # self-study portion.

Text Book:

Donald Hearn and M. Pauline Baker, *Computer Graphics,* Prentice Hall of India, Second Edition, Reprint 2007.

UNIT I : Chapter 1 Section (1-3,1-4,1-5,1-8) and Chapter 2 Section(2-1,2-5,2-6,2-7)

UNIT II : Chapter 3 Section (3-1,3-2,3-5,3-12,3-14) and Chapter 4 Section(4-1,4-3,4-5,4-6,4-7)

UNIT III : Chapter 5 Section (5-1,5-2,5-3,5-4) and Chapter 6 Section(6-1,6-3,6-5,6-6,6-6)

UNIT IV : Chapter 8 Section(8-2, 8-5)

UNIT V : Chapter 9 Section (9-1, 9-2)

Books for Reference:

William M. Newman and Robert F. Sproull, *Principles of Interactive Computer Graphics*, TMH, Second Edition, Reprint 2010.

SEMESTER - VI CORE-XIII

COMPUTER NETWORKS

Course Code : 14UCA6C13 **Max. Marks : 100**
Hours/week : 5 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

* To learn the concepts of data communications and to be familiar with the transmission media.
* To understand the functions of OSI layers and the security aspects in networks.

UNIT- I **15 hours**

Data Communications:Characteristics–Components.Networks:Distributed Processing–Network Criteria–Applications-Protocols–Standards. Basic Concept:Line Configuration.Topology:MESH,STAR,TREE,BUS,RING.Transmission mode. Categories of Networks: LAN,MAN,WAN. OSI Model: Organization of the Layers –#Function of the layers#.

UNIT-II **15 hours**

Signals: Analog and Digital – Periodic and nonperiodic signals.Digital data transmission: Parallel-Serial.DTE – DCE Interface:DTE – #DCE–MODEMS#. Transmission Media: Guided Media. Multiplexing: FDM, WDM, TDM.

UNIT-III **15 hours**

Error Detection and Correction: Types of Errors – Types of Redundancy Check – Error Correction. Data Link Control: Line Discipline – #Flow control# – Error control. LAN:Project802-Ehernet-Tokenbus-Token ring-FDDI.

UNIT-IV **15 hours**

Switching: Circuit switching - Packet Switching – Message switching. Networking and Internetworking Devices: Repeaters – Bridges – Routers – Gateways. Routing Algorithms:Distance vector Algorithm – Link state Algorithm-Dijkstra Algorithm. TCP/IP Protocol Suite:Part-I:Network Layer-Internetwork Protocol(IP).Transport layer : UDP-TCP.

UNIT-V **15 hours**

TCP/IP Protocol Suite:Part-II-Application Layer:FTP,TFTP,SMTP MAN : IEEE 802.6. Network Security: Four Aspects of Security – #Encryption/DecryptionMethods#- Digital Signature-PGP.

 # ..... # self-study portion.

Text Book:

BehrouzA.Forouzan, Data *Communications and Networking*, Tata McGraw Hill, Second Edition.

UNIT I: Chapter 1,2,3
UNIT II: Chapter 4,6,7,8
UNIT III: Chapter 9,10,12
UNIT IV: Chapter 14,21,24
UNIT V: Chapter 13,25,27

Books for Reference:

Andrew S. Tanenbaum, *Computer Networks*, PHI, Fourth Edition, 2003

SEMESTER - VI :CORE - XIV (A)

FUNDAMENTALS OF LINUX

Course Code : 14UCA6C14 **Max. Marks : 50**
Hours/week : 3 **Internal Marks : 20**
Credit : 2 **External Mark : 30**

Objective:

To understand the concept of Linux Programming

UNIT-I **9 hours**

Linux: An introduction – Linux Commands: Directory Oriented Commands – File Oriented Commands – Process Oriented Commands – #Communication Oriented Commands# – General Purpose Commands.

UNIT-II **9 hours**

Pipes and Filters : Pipe – redirection – Filters – Vi Editor : Starting Vi modes – insert, delete and replace commands – #Search Commands# – Redo, Undo Commands.

UNIT-III **9 hours**

Shell Programming : Shell script – Shell variables – escape mechanisms - Shell meta characters – #control statements# – iterative statements.

UNIT-IV **9 hours**

Some sample Shell scripts – System Administration: system administrator – booting and shutting down the system – adding and deleting a user.

UNIT-V **9 hours**

The C Shell : Setting variables – input – loops – MySQL and PHP : MYSQL – working with mysql – operators – data types – creating a table – inserting and selecting values – updating and altering a table – dropping a table – #PHP# – First example – variables.

 # ..... # self-study portion.

Text Book:

Mohamed Ibrahim, Linux – A Practical Approach, By Firewall Media publications, 2005.

UNIT I: Chapter 1 and 2
UNIT II: Chapter 3 and 4
UNIT III: Chapter 5
UNIT IV: Chapter 6 and 7
UNIT V: Chapter 9 and 10

Book for Reference:

Richard Petersen, Linux – The Complete Reference, Sixth Edition, Tata McGRAW Hill Publications.

SEMESTER - VI :CORE - XIV (B)

SHELL PROGRAMMING LAB

Course Code : 14UCA6C14P	**Max. Marks : 50**
Hours/week : 2	**Internal Marks : 20**
Credit : 2	**External Mark : 30**

1. Write a Shell program to read a string using while and continue statements. If the given string has no value in it, then display "Null String" otherwise display the given string.
   3 hours

2. Write a Shell program to read 2 words one after another. Display the first word, go to sleep mode for 30 seconds using 'sleep' command. After 30 seconds, display the second word.
   3 hours

3. Write a Shell program for finding out the factorial of a given number using for loop.
   3 hours

4. Write a Shell program to delete the files interactively using 'rm' command and 'while' statement.
   3 hours

5. Write a Shell program using 3 arguments to take the pattern as well as input and output file names. If the pattern is found then display "Pattern Found" else display "Error Message". Also check if right number of arguments is entered.
   3 hours

6. Write a Shell script to check the user is eligible for vote or not [one must attain 18 years for voting. Ignore month differences].
   3 hours

7. Write a Shell script to check whether a given string is palindrome or not.
   3 hours

8. Enhance the cp command to copy files. Display the necessary error message if error occurs.
   3 hours

9. Write a Shell script for a file contains records with each record containing name of the city, name of the state and name of the country. How would you sort this file with country as the primary sort key and state as the secondary sort key.
   3 hours

10. Write a Shell program to prepare the electricity bill based on the following conditions:

    For first 100 units – Rs.0.75/unit
    For next 100 units – Rs.1.50/unit
    Above 200 units – Rs.300/unit

    3 hours

SEMESTER – VI :CORE - XV

IT SYSTEMS MANAGEMENT

Course Code : 14UCA6C15 **Max. Marks : 100**
Hours/week : 4 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective:

To provide the basic knowledge of designing, implementing and managing the infrastructure of an IT environment.

UNIT-I **12 hours**

Definition of Systems Management – Organizing for Systems Management – Staffing for Systems Management – Customer Service.

UNIT-II **12 hours**

Availability – Performance and Tuning – #Product Acceptance#.

UNIT-III **12 hours**

Change Management – #Problem Management# – Storage Management.

UNIT-IV **12 hours**

Network Management – Configuration Management – Capacity Planning.

UNIT-V **12 hours**

Strategic Security – Disaster Recovery – #Facilities Management#.

 # ..... # self-study portion.

Text Book:

Rich Schiesser, *IT Systems Management*, Prentice Hall of India Private Ltd., New Delhi, 2005.

UNIT I: Chapter 1, 5-7
UNIT II: Chapter 8 -20
UNIT III: Chapter 11 – 13
UNIT IV: Chapter 14 – 16
UNITV: Chapter 17 – 19.

Books for Reference:

Harris Kern, Mayra Muniz and Rich Schiesser ,Kindle eBook IT Production Services, 2006.
Prentice Hall of India Private Ltd., New Delhi.

SEMESTER - VI CORE - XVI
PHP PROGRAMMING

Course Code : 14UCA6C16 **Max. Marks : 100**
Hours/week : 4 **Internal Marks : 40**
Credit : 4 **External Mark : 60**

Objective

To understand the concepts of PHP and MySQL.

UNIT-I **12 hours**

Introduction: What is PHP? – History of PHP – Installing PHP – Language Basics: Lexical Structure – Data types – What's a Variable?– PHP variable and value types – Using PHP Variables – Expression and Operators – #Flow Control statements#.

UNIT-II **12 hours**

Functions: Calling a function – Defining a function – Introduction to Strings – Comparing Strings – Manipulating and Searching strings – #Arrays: Types of Arrays# – Array functions – Storing data in Arrays.

UNIT-III **12 hours**

Form Handling – Form Validation – $_GET variable – $_ POST variable – $_REQUEST variable – Creating the Form –#Creating the Upload script# – Using your File system: File paths and permissions – Displaying directory contents – Working with fopen( ) and fclose( ).

UNIT-IV **12 hours**

Using Cookies: What are Cookies? – Setting Cookies – Using Cookie variables – Session Basics: What's a session? – Understanding Session variables – Managing User preferences with Sessions – Graphics: Drawing functions – #Creating and Drawing images#.

UNIT-V **12 hours**

Installing and Configuring M ySQL – Establishing a connection and poking around – Creating a database table – Inserting data into the table – #Selecting and displaying data3.

 # ..... # self-study portion.

Text Book

Julie Meloni and Matt Telles, *PHP 6*, Course Technology, CENGAGE Learning, India Edition, 2008.

UNIT I : Chapters - 3, 5
UNIT II: Chapter 6
UNIT III: Chapters – 9,10
UNIT IV: Chapters 16, 17
UNIT V:Chapters 1,11,12,13,14

Books for Reference

Kevin Tatroe, Peter MacIntyre and RasmusLerdorf, Programming PHP, O'REILLY media , 3rd edition, 2013.

SEMESTER – VI :CORE - XVII (A)

PHP LAB

Course Code : 14UCA6C17P1 **Max. Marks : 50**
Hours/week : 2 **Internal Marks : 30**
Credit : 2 **External Mark : 20**

1. Write a PHP program to find the factorial of a number.
   2 hours
2. Write a PHP program using Conditional Statements.
   2 hours
3. Write a PHP program to find the maximum value in a given multi dimensional array.
   2 hours
4. Write a PHP program to find the GCD of two numbers using user-defined functions.
   2 hours
5. Design a simple web page to generate multiplication table for a given number using PHP.
   3 hours
6. Design a web page that should compute one's age on a given date using PHP.
   2 hours
7. Write a PHP program to download a file from the server.
   2 hours
8. Write a PHP program to store the current date and time in a COOKIE and display the 'Last Visited' date and time on the web page.
   2 hours
9. Write a PHP program to store page views count in SESSION, to increment the count on each refresh and to show the count on web page.
   3 hours
10. Write a PHP program to draw the human face.
    3hours
11. Write a PHP program to design a simple calculator.
    4 hours
12. Design an authentication web page in PHP with MySQL to check username and password.
    3hours

SEMESTER - VI : CORE - XVII (B)

XML LAB

Course Code : 14UCA6C17P2 **Max. Marks : 50**
Hours/week : 2 **Internal Marks : 30**
Credit : 2 **External Mark : 20**

1.Write an XML program to display a string.

2 hours

2. Write an XML program for the following:

Primary information	Secondary information	Tertiary information
Name	Nick name	Birthday
Title	Contact source	Spouse's name
Company name	Purchases	Anniversary
Address		
Phone number		
E-mail		

4 hours

3. Write an XML program to prepare a sonnet.

2 hours

4. Write an XML program for party invitation with an image.

2 hours

5. Write an XML program for sending greeting using colorful borders.

3hours

6. Write an XML program to display 10 different colors using Cascading Style Sheet.

4 hours

7. Write an XML program for display baseball statistics.

3 hours

8. Write an XML program for listing of job details of various employees using the following fields(job-title, job-id, country, company, salary, year of experience).

4 hours

9. Write an XML program to create XSL for displaying various country names and their currency names.

3hours

10. Write an XML program to prepare a calendar for a month using XSL.

3hours

SEMESTER - VI : SKILL BASED ELECTIVE – IV

FUNDAMENTALS OF XML

Course Code : 14UCA6S4 **Max. Marks : 100**
Hours/week : 2 **Internal Marks : 40**
Credit : 2 **External Mark : 60**

Objective:

To understand the concept of XML

UNIT-I **6 hours**

Introducing XML: What is XML – An introduction to XML applications: XML for XML - Your first XML document – Structuring data: preparing a style sheet for document display attributes, empty tags and XSL – #Well formed XML documents#.

UNIT-II **6 hours**

Foreign Languages and Non Roman Text: Legacy character sets – Document type definitions: Document type definitions and validity – Entities and external DTD subsets – Attribute declarations in DTDs: What is an attribute? – #Attribute types# – Embedding Non-XML data.

UNIT-III **6 hours**

Cascading Style Sheets level 1: What is CSS? – Attaching style sheets to documents – inheritance – comments in CSS – Font, Color, background, text and box properties.

UNIT-IV **6 hours**

XSL transformations – Overview of XSL transformations – computing the value of a node with XSL:value of – processing multiple elements with XSL:for each – copying the current node with XSL:copy – #Merging multiple style sheets#.

UNIT-V **6 hours**

Namespaces - XML applications: The importance of reading DTDs – Designing a new XML application: Organisation of the data.

 # ..... # self-study portion.

Text Book :

Elliote Rusty Harold, XML Bible – IDG Books India (P) Ltd. First Edition 2000.

UNIT I: Chapter 1- 6 UNIT II: Chapter 6, 8-11

UNIT III: Chapter 12 UNIT IV: Chapter 14

UNIT V: Chapter 20 & 23

Books for Reference:

Heather Williamson ,XML The Complete Reference, Tata McGraw Hill 2001 Edition.

SEMESTER - VI :EXTRA CREDIT – IV

MOBILE COMMUNICATIONS

Course Code : 14UCA6EC4	**Max. Marks : 100***
Hours/week : -	**Internal Marks : --**
Credit : 4*	**External Mark : 100***

Objective:

To introduce the concepts of emerging technologies in mobile computing.

UNIT–I

Introduction – Mobility of Bits and Bytes – Mobile Computing – Dialogue Control – Networks – Middle and Gateways – #Application and Services# – Developing Mobile Computing Applications

UNIT–II

Architecture for Mobile Computing – #Three Tier Architecture# – Design Considerations for Mobile Computing.

UNIT–III

Emeerging Technologies: Bluetooth - WiMAX - #Java Card#.

UNIT–IV

Global System for Mobile Communications: GSM Architecture - GSM Entities - Network aspects in GSM - Authentication and Security.

UNIT–V

CDMA & 3G: Spread Spectrum Technology - CDMA versus GSM - Wireless data - Third generation network - Applications on 3G.

 # ..... # self-study portion.

Text Book:

Asoke K Talukder, Toopa R Yavagal, *Mobile Computing*, TMH, 2005

UNIT I: Chapter 1(1,3-8) UNIT II: Chapter 2(4-6)

UNIT III: Chapter 4 (2,4,7) UNIT IV: Chapter 5 (1-3, 7,9)

UNIT V: Chapter 9 (1,2,4-7)

Books for Reference:

Amjad Umar, Mobile Computing and Wireless Communications, published by NGE Solutions, 2004.