

Department of Computer Science

B.Sc. IT Syllabus (CBCS Pattern)

With effect from JUNE 2017 onwards

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Semester	Sub Code	Course Title	Hours	Credits
I	17U1FMC1	Fundamentals of Information Technology	6	6
	17U1FMC2	Programming in C	5	3
	17U1FAC1	Digital Electronics	5	3
	17U1FMP1	LAB-1: C programming Lab	3	1.5
	17U1FSM1	LAB-2: Office Automation Lab	3	1.5
	17U1FES1	Environmental Studies	2	2
II	17U2FMC3	Object Oriented Programming with C++	6	6
	17U2FMC4	Multimedia Technology	5	3
	17U2FAC2	Discrete Mathematics	5	3
	17U2FMP2	LAB- 3: C++ Programming Lab	3	1.5
	17U2FSM2	LAB-4: Multimedia Lab	3	1.5
	17U2FVE1	Value Education	2	2
III	17U3FMC5	Operating systems	4	4
	17U3FMC6	Visual Programming	5	4
	17U3FMC7	LINUX Programming	4	4
	17U3FAC3	Data Structures and Computer Algorithms	4	4
	17U3FAC4	Computerized Accounting	3	2
	17U3FMP3	LAB-5: LINUX Programming Lab	4	2
	17U3FSM3	LAB- 6: Visual Programming	4	2
	17U3FNM1	Non major Elective(NME) Introduction to Internet	2	2
IV	17U4FMC8	Programming in JAVA	5	4
	17U4FMC9	Data Communication & Computer Networks	4	4
	17U4FMC10	Web Programming Using PHP and MySQL	4	4
	17U4FMC11	Computer Organization	4	4
	17U4FAC5	Numerical Methods	3	2

	17U4FMP4	LAB-7: Web Programming Lab	4	2
	17U4FSM4	LAB-8: JAVA Programming Lab	4	2
	17U4FNM2	PC Software	2	2
V	17U5FMC12	Relational Database Management Systems	5	4
	17U5FMC13	Information Security	5	4
	17U5FMC14	Software Engineering	5	4
	17U5FMC15	Dot Net Technologies	5	4
	17U5FME1	Elective – I A. Programming in ASP B. Cloud computing C. Cryptography and Network Security D. Client /Server computing	4	4
	17U5FMP5	LAB-9: RDBMS Lab	3	3
	17U5FSM5	LAB-10: Dot net Programming Lab	3	3
		Extension activity		1
VI	17U6FMC16	Android Programming	5	5
	17U6FMC17	Data Mining and Data Warehousing	5	4
	17U6FME2	Elective – II E. PHP Programming F. Mobile Computing G. WAP and XML H. Management Information systems	4	4
	17U6FMP6	LAB-11: Open source Lab	7	2
	17U6FMP7	Project and Viva-voce	7	5
	17U6FSM6	Part- IV SBE Animation Techniques Using FLASH	2	2
			Extension Activity	

Course Code	Course Title	C	H	I	E	T
17U1FMC1	INTRODUCTION TO INFORMATION TECHNOLOGY	6	6	25	75	100

Unit I: (20 hours)

Introduction to Computers - Generation of Computers - Classification of Digital Computer - Anatomy of Digital Computer.

Unit II : (20 hours)

Architecture of Computer - CPU and Memory - Secondary Storage Devices - Input Devices - Output Devices.

Unit III : (20 hours)

Introduction to Computer Software - Programming Language - Operating Systems - Introduction to Database Management System - Data Mining and On-line Analytical Processing.

Unit IV: (15 hours)

Computer Networks - WWW and Internet - Email - Intranets - Mobile Computing and Business on the Internet.

Unit V : (15 hours)

Introduction to Multimedia - Multimedia Applications - Computers at Home, Education, Entertainment, Science, Medicine and Engineering - Introduction to Computer Security - Computer Viruses, Bombs, Worms.

Text Book:

1. Alexis Leon And Mathews Leon, Fundamentals of Information Technology , Vikas Publishing House Pvt. Ltd, 2009.

Reference Book:

1. Dennis P. Curtin ,Kim foley, KunalSen and Cathleen Morin, Information Technology – The Breaking Wave, Tata-McGraw Hill Publications, 2005.

Course Code	Course Title	C	H	I	E	T
17U1FMC2	PROGRAMMING IN C	3	5	25	75	100

UNIT I: Overview of C (15 hours)

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 (15 hours)

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

UNIT III: Arrays (15 hours)

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 (15 hours)

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

UNIT V: Pointers (15 hours)

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

Text Book:

1. E.Balagurusamy, Programming in ANSI C, 3rd Edition, 2005, Tata McGraw Hill Publishing Company.

Chapters:

Unit I: 1 (Except 1.3-1.7, 1.10-1.12), 2 (Except 2.9, 2.13), 3 (Except 3.13)

Unit II: 4 – 6

Unit III: 7, 8 (Except 8.5, 8.6, 8.7, 8.9, 8.10)

Unit IV: 9 (Except 9.20), 10

Unit V: 11 (Except 11.8, 11.10, 11.12, 11.14, 11.15, 11.17), 12 (Except 12.6)

Reference Books:

1. Gottfried , Programming with C, Schaum's Outline Series, , 2006 Tata McGraw Hill
2. Ashok N.Kamthane , Programming with ANSI and Turbo C , 2006, Pearson Education
3. H. Schildt, C: The Complete Reference, 4th Edition, 2000 ,TMH Edition
4. Kanetkar Y., Let us C, 1999, BPB Pub., New Delhi

Course Code	Course Title	C	H	I	E	T
17U1FAC1	DIGITAL ELECTRONICS	3	5	25	75	100

Unit - I : (15 hours)

Numbers Systems and Discrete Logic Why Binary– binary to decimal – decimal to binary – octal – hexa decimal – ASCII code – Excess-3 Code – Gray Code – transistor inverter – OR gates – AND gates – Boolean Algebra – NOR gates – NAND gates.

Unit – II: (15 hours)

Circuit Analysis and Design Boolean Law and theorems –sum of product method – K-Map truth tables – Pairs, Quads, Octets – K-Map simplifications – Don't care – product of sum method – product of sum simplifications.

Unit – III: (15 hours)

Data Processing and Arithmetic circuits Multiplexers – De-multiplexers – 1-of- 16- Decoders – BCD-to-Decimal Decoders – 7 segment decoders – Encoders – Exclusive-OR gates – parity generators-checkers – Binary Addition – Binary Subtraction – 2's & 1's complement representation – Complement Arithmetic – Arithmetic building blocks.

Unit – IV: (15 hours)

Flip-Flops, Clocks and timers RS flip-flop – D Flip-Flop – JK Flip-Flop – JK Master Slave Flip-Flop – Schmitt Trigger – 555 Timer Astable – 555 Timer Monostable – 555 Timer Schmitt Trigger.

Unit – V: (15 hours)

Shift Registers and Counters Types of Registers – Serial in serial out – serial in parallel out – parallel in serial out – parallel in parallel out– Ring counter – Ripple Counter – Synchronous Counter – MOD counters – Preset-able counters.

Text Book:

Albert Paul Malvino & Donald P. Leach, Digital Principles and Applications, Fourth Edition, Tata McGraw-Hill Edition, 2005

Unit I: Chapters: 1, 4

Unit II: Chapters: 2

Unit III: Chapters: 3.1 to 3.8, 5.1 to 5.7

Unit IV: Chapters: 8.1, 8.3,8.6,8.7,8.8, 9.3,9.4

Unit V: Chapters: 10, 11.1,11.3,11.5,11.6

Reference Book:

M.Morris Mano, Digital Logic and Computer Design, PHI, 2005

Course Code	Course Title	C	H	I	E	T
17U1FMP1	C PROGRAMMING LAB	1.5	3	50	50	100

Cycle-1

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

Cycle-2

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

Course Code	Course Title	C	H	I	E	T
17U1FSM1	SBE – OFFICE AUTOMATION LAB	2	3	50	50	100

WORD

1. Open a word document to prepare your **Resume** by performing the following operations.
 - (a) Formatting the Text- Alignment & Font style
 - (b) Page setup (margin alignment, page height & width)
2. Create a student mark sheet using table, find out the total & average marks and display the result.
3. Design an invitation of your course inauguration function using different fonts, font sizes, bullets and Word Art/ Clip Art
4. Mail Merge Concept
 - (a) Prepare an invitation and to be sent to specific addresses in the data source.

EXCEL:

1. Create suitable work sheet with student mark details and use Data sort to display results and make out a suitable chart.
2. Prepare salary bill in a worksheet showing Basic Pay, DA, HRA, Gross salary, PF, Tax and Net salary using suitable Excel Functions.

POWER POINT:

1. Create a power point presentation to explain various aspects of your college using auto play.
2. Create a power point 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 Clip Art and animation features.

ACCESS:

1. Create a table for storing marks of 10 students. The fields of the table are given below: Reg. No., Name, Mark1, and Mark2, Mark3, Test average (Best Two /2), Assignment, Seminar and Total marks (Test average + Assignment + Seminar) The fields 'Mark1', 'Mark2', 'Mark3' should not allow the user to enter a mark greater than 25 and should display proper message in such case. Similar constraint for the field 'Assignment' is 5 marks and for the field 'Seminar', it is 10 marks.
2. Create a table showing names of authors of at least 10 different books, title of books, the prices of these books, name of publishers and year of publication. Also create Select, Action and Cross-tab queries to display the records from this table meeting the criteria used in these queries.
3. Create a form to enter the data directly into this form. The fields required are: Basic Pay, DA, HRA, Gross salary, PF, Income tax and Net salary.
4. Create a report that displays the customer name, address, phone number, Item code, product quantity of the customers whose orders have been pending for over a month.

Course Code	Course Title	C	H	I	E	T
17U2FMC3	OBJECT ORIENTED PROGRAMMING WITH C++	6	6	25	75	100

UNIT I: (20 hours)

Software Crisis – Software Evolution – Basic Concepts of Object-Oriented Programming – Benefits of OOP – Object-Oriented Languages - Applications of OOP – Application of C++ - Structure of a C++ Program – Tokens – Keywords – Identifiers – Basic Data Types – User-defined Data types – Derived data types – Symbolic constants – Type compatibility – Declaration of variables – Dynamic initialization of variables –Reference variables – Operators in C++ - Manipulators – Type cast operator – Expressions and their types-Implicit conversions – Control structures – The main function – Function prototyping – inline functions – Function overloading.

UNIT II: (20 hours)

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

UNIT III: (20 hours)

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

UNIT IV: (15 hours)

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

UNIT V: (15 hours)

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:

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

Unit I – Chapter 1 (Except 1.3, 1.4), Chapter 2 (Only 2.6),
Chapter 3 (Except 3.20, 3.21, 3.22), Chapter 4

Unit II – Chapter 5 (Except 5.18, 5.19), Chapter 6 (Except 6.8, 6.9, 6.10)

Unit III – Chapter 7, Chapter 8

Unit IV – Chapter 9, Chapter 10

Unit V – Chapter 11 (Except 11.8), Chapter 12 (Only 12.2, 12.3 and 12.4)

Reference Books:

1. Herbert Schildt, C++ - The Complete Reference, 1998, TMH.
2. Paul Deitel, Harvey Deitel, C++ How to Program, Ninth edition (2014) PHI.
3. Ashok N.Kamthane, Object Oriented Prog., with ANSI & Turbo C ++, Pearson Education.
4. Poornachandra Sarang ,Object-Oriented Programming With C++ , 2nd Edition, PHI.

Course Code	Course Title	C	H	I	E	T
17U2FMC4	Multimedia Technology	3	5	25	75	100

Unit – I: Multimedia Introduction (15 hours)

Definitions – CD-ROM and the Multimedia Highway – Where to use Multimedia. Introduction to Making Multimedia – The stages of a Project – what you need. Hardware – Macintosh Verses Windows – Connections – Memory and Storage devices – Input devices – Output hardware.

Unit-II: Basic Tools (15 hours)

Basic software tools-Text Editing and Word processing Tools-OCR software-Painting and Drawing Tools-3D Modeling and animation Tools-Image Editing Tools-Sound Editing Tools-Animation , video and digital movie tools. Multimedia authoring tools-Making Instant multimedia-types of authoring tools-card and page-based authoring tools-Icon and object-based authoring tools-time-based authoring tools-Class platform authoring notes.

Unit-III: Text, Sound and Images (15 hours)

Text: The power of meaning –about fonts and faces-using text in multimedia-computers and text-font editing and design tools-hypermedia and hypertext. Sound: The power of sound-multimedia system sounds-digital audio-making MIDI audio-audio file formats-MIDI versus digital audio-adding sound to your multimedia project-production tips. Images: before you start to create-making still images-color-image file formats.

Unit-IV: Animation and Video (15 hours)

Animation: The power of motion-principles of animation-Animation by computer-making animations that work. Video: using video-how video works-broadcast video standards-analog video-digital video-video recording and tape formats-shooting and editing video.

Unit-V: Planning (15 hours)

Planning and cost: The process of making multimedia-scheduling-estimating-RFP's and bid proposals. Designing and producing: Designing-producing.

Text Book:

Tay Vaughan - Multimedia making it Work-6th Edition-Tata McGraw-Hill.

Reference Books:

1. David Hillman-Multimedia Technology and Applications-Galgotia Publications Pvt. Ltd.
2. Judith Jaffcoats – “Multimedia in practice – Technology operations, PHI, 1998.

Course Code	Course Title	C	H	I	E	T
17U2FAC2	DISCRETE MATHEMATICS	3	5	25	75	100

Unit-I: Set Theory

(15 hours)

Introduction – Sets - Notation and Description of Sets – Subsets - Venn-Euler Diagrams - operations on sets - Properties of set operations - verification of the Basic Laws of Algebra by Venn diagram - The principle of Duality.

Unit-II: Relations

(15 hours)

Cartesian product of two sets - Relations - Representation of Relations - operations on Relations - Equivalence Relation. Functions and Operators - one-to-one, onto functions - Special types of functions - invertible functions - composition of functions.

Unit-III: Mathematical Induction

(15 hours)

Techniques of Proof - Mathematical induction Recurrence Relation and Generating Functions: Recurrence – An introduction - Polynomials and their evaluations - Recurrence Relations - Solution of finite order Homogeneous Relations - Solution of finite order Non-Homogeneous Relations - Generating Functions.

Unit-IV: Matrix Algebra

(15 hours)

Introduction - Matrix Operations - Inverse of a square matrix - Elementary operations and Rank of a matrix - Simultaneous equations - Eigen Values and Eigen Vectors.

Unit-V: Logic

(15 hours)

Introduction - TF Statements – Connectives - Atomic and Compound statements - Well Formed Formulae - Truth table of a formula – Tautology - Tautological implications and equivalence of formulae - Lattices - Some properties of Lattices.

Text Book:

Dr. M.K.Venkatraman, Dr.N.Sridharan, N.Chandrasekaran – “Discrete Mathematics” - The National Publishing Company - 2003.

Reference Books:

1. Alan Doerr,Levassure – “Applied Discrete Mathematical Structures for Computer Science”.
2. Trembly and Manohar – “Discrete Mathematical Structures with Application to Computer Science”.

Course Code	Course Title	C	H	I	E	T
17U2FMP2	C++ PROGRAMMING LAB	1.5	3	50	50	100

Cycle- 1

1. Printing Prime numbers between two given numbers.
2. Printing 3 digit numbers as a series of words. (*Ex. 543 should be printed out as Five Four Three*).
3. Finding area of geometric shapes using function overloading.
4. Inline functions for simple arithmetic operations.
5. Demonstrating the use of Pre-defined Manipulators.
6. Demonstrating the use of friend function.
7. Creating student mark list using array of objects,
8. Demonstrating constructor overloading.
9. Overloading the unary – operator.
10. Demonstrating single inheritance.
11. Demonstrating the use of “**this**” pointer.
12. Designing our own manipulator.
13. Illustrating function templates.
14. Illustrating class templates.

Cycle- 2

1. Overloading the binary + operator.
2. Demonstrating Multiple inheritance.
3. Demonstrating Multilevel inheritance.
4. Demonstrating Hierarchical inheritance.
5. Demonstrating Virtual functions.
6. Processing mark list using binary file.
7. Count number of objects in a file.
8. Demonstrating the use of Command-line arguments.

Course Code	Course Title	C	H	I	E	T
17U2FSM2	MULTIMEDIA LAB	1.5	3	50	50	100

Photoshop

1. Invitation
2. Greeting Card
3. Logo Design
4. Poster Design
5. Action Setting
6. Merging Multiple Images
7. Artistic Effect
8. Lighting Effect
9. Grayscale to RGB
10. GIF Animation

Flash

1. Microscopic Effect
2. Bouncing Ball
3. Moving an Object
4. Advertisement
5. Mask Effect
6. Snow Falling Effect

**B.Sc. Information Technology Syllabus (CBCS Pattern)
With effect from June 2017 onwards**

Sem	Course	Title	Hours/ Week	Credits	Int.	Ext.	Total
III	Course Core-5	Operating systems	4	4	25	75	100
	Course Core-6	Visual Programming	5	4	25	75	100
	Course Core-7	LINUX Programming	4	4	25	75	100
	Allied Paper-3	Data Structures and Computer Algorithms	4	4	25	75	100
	Allied Paper-4	Computerized Accounting	3	2	25	75	100
	Core Lab	LAB-5: LINUX Programming Lab	4	2	50	50	100
	SBE	LAB- 6: Visual Programming	4	2	50	50	100
	Non-Major elective	Non major Elective(NME) Introduction to Internet	2	2	25	75	100
		TOTAL		30	24		
Sem	Course	Title	Hours/ Week	Credits	Int.	Ext.	Total
IV	Course Core-8	Programming in JAVA	5	4	25	75	100
	Course Core-9	Data Communication & Computer Networks	4	4	25	75	100
	Course Core-10	Web Programming Using PHP and MySQL	4	4	25	75	100
	Course Core-11	Computer Organization	4	4	25	75	100
	Allied Paper - 5	Numerical Methods	3	2	25	75	100
	Core Lab	LAB-7: Web Programming Lab	4	2	50	50	100
	SBE	LAB-8: JAVA Programming Lab	4	2			
	Non-Major Elective	PC Software	2	2	25	75	100
		TOTAL		30	24		

Course Code	Course Title	H	C	I	E	T
17U3FMC5	OPERATING SYSTEMS	4	4	25	75	100

Objectives:

- To impart the knowledge of system software.
- Learning the concept and operations of operating systems.

Unit - I: Introduction (12 hours)

Operating system basics – Computer System organization – Computer system architecture – operating system structure – Operating system operations – Distributed systems – Open source operating systems. **System structures:** Operating system services – User operating system interface – System calls – Operating system structure.

Unit - II: Process Management (12 hours)

Process concepts – Process scheduling – Inter-process communication. **Multithreaded programming:** Overview – Multithreading models. **Process Scheduling:** Basic concepts – Scheduling criteria – Scheduling algorithms.

Unit - III: Memory Management (12 hours)

Memory management strategies – Background – Swapping – Contiguous memory allocation – Paging – Structure of the page table – Segmentation. **Virtual memory management:** Background – Demand paging – Copy-on-write – Page replacement – Thrashing.

Unit - IV: Storage Management (12 hours)

File system: File concepts – Access methods – File sharing – Protection. **Secondary storage structures:** Overview of Mass-storage structure – Disk structure – Disk scheduling – Disk management - RAID structure. **I/O systems:** Overview – I/O hardware.

Unit - V: Process Coordination (12 hours)

Synchronization: Background – The Critical-Section problem – Semaphores. **Deadlocks:** System model – Deadlock characterization – Methods for handling deadlocks – Deadlock prevention – Deadlock avoidance.

Chapters:

- Unit – I : 1.1 -1.5, 1.10, 1.13, 2.1-2.3, 2.7.
Unit – II : 3.1, 3.2, 3.4, 4.1, 4.2, 5.1-5.3.
Unit – III : 8.1-8.6, 9.1-9.4, 9.6.
Unit – IV : 10.1, 10.2, 10.5, 10.6, 12.1, 12.2, 12.4, 12.5, 12.7, 13.1, 13.2.
Unit – V : 6.1, 6.2, 6.5, 7.1-7.5.

Text Book:

Abraham Silberschatz, Peter B.Galvin, Greg Gagne - “Operating System Concepts “ – Wiley Student Edition – 8th Edition - 2010.

Reference Books:

1. D.M.Damdhere - “Operating systems – A concept based approach” – 2nd Edition – TMH.
2. William Stalings – “ Operating system, Internals and design principles” – 2008 – PHI.

Course Code	Course Title	H	C	I	E	T
17U3FMC6	VISUAL PROGRAMMING	5	4	25	75	100

Objectives:

- To impart the knowledge of computer programming with GUI approach.
- Learning the concept and controls of a front-end tool.

UNIT I : Introduction

(15 hours)

Overview of the IDE - Managing forms in Visual Basic - The Visual Basic Language: Declaring Constants, Variables – Selecting variable types-Converting between data types - setting variable scope- verifying data types – declaring arrays & Dynamic arrays – Declaring Subroutines – Declaring functions – Handling strings – Converting strings to numbers and back again – Handling operators & operator precedence – Using if-else statements- Using select case –Looping – Handling higher math- Handling Dates and Times.

UNIT II : Controls

(15 hours)

Text Boxes and Rich text Boxes- command buttons – checkboxes & option buttons – list boxes and combo boxes – picture boxes and image controls – The timer control – The frame control – the label control – the shape control.

UNIT III: Menus & Toolbars

(15 hours)

Visual Basic Menus: adding a menu to a form – modifying & deleting menu items – creating sub menus – using Visual Basic predefined menus-Handling MDI forms & MDI child menus-creating & displaying popup menus – Adding & deleting menu items at runtime-- Toolbars, status bars, progress bars and coolbars.

UNIT IV : Files & Data Base Concepts

(15 hours)

File handling and File Controls – Using DAO,RDO and ADO : Creating and managing databases with the visual data manager – creating a table - Adding a Data control – opening a database with the data control, Remote data control, ADO data control – connecting a databases using controls-working with database objects in code.

UNIT V : Activex controls & Documents

(15 hours)

Creating an Activex control – Designing Activex control- Adding controls to an Activex control- Registering an Activex control – Creating an Activex Document – Activex Document Dll vs EXEs – Testing an Activex Document.

Text Book:

Steven Holzner – “Visual Basic 6 Programming Black Book” - 16th Reprint Edition -Dreamtech Press Publications.

Reference Books:

1. Petroustos.E – “Mastering Visual Basic 6” – Fifth edition, BPB Publications
2. Jerke .N - “ Visual Basic 6.0 – The Complete reference” – Nineteenth Reprint 2004, Tata-McGraw Hill Publishing.
3. Gary Cornell- “VB 6 from the Ground up” – Second Reprint 1999-Tata-McGraw Hill Private Ltd.

Course Code	Course Title	H	C	I	E	T
17U3FMC7	LINUX PROGRAMMING	4	4	25	75	100

Objectives:

- To impart the knowledge of open source software.
- Learning the concept and processes of Linux operating system.

Unit –I: Introduction to Linux

(12 hours)

Getting started: An introduction to UNIX, Linux and GNU - Programming Linux.

Shell programming: Introduction - Pipes and redirection - The shell as a Programming language- Shell syntax - Going Graphical - Dialog utility - Putting it altogether.

Unit-II: Working With Files

(12 hours)

Linux file structure-System calls and device drivers - Library functions - low level file access -The Standard I/O library - Formatted input and output - File and directory maintenance -Scanning Directories – Errors - The /Proc file systems - Advanced Topics: fcntl and mmap.

Unit-III: Processes and Signals

(12 hours)

Introduction to process - Process structure - Starting new processes - Signals.

Unit-IV: Inter Process Communication

(12 hours)

Pipes - Process pipes - Sending output to ‘popen’ - The pipe call - Parent and child processes - Named pipes: FIFOs - The CD database applications. **Semaphores, Shared memory and Message queues** : Semaphores - Shared memory - Message queues – IPC Status commands.

Unit-V: Sockets

(12 hours)

Introduction - Socket connections - Network information - Multiple clients - Datagrams.

Chapters:

Unit – I : 1 and 2.

Unit – II : 3

Unit – III : 11.

Unit – IV : 13 and 14.

Unit – V : 14 and 15

Text Book:

Neil Matthew,Richard Stones-“ Beginning Linux Programming”,Fourth Edition,2008,Wiley Publishing Inc.

Reference Book:

Linux system programming- Robert Love,O’Reily,SPD.

Course Code	Course Title	H	C	I	E	T
17U3FAC3	DATA STRUCTURES AND COMPUTER ALGORITHMS	4	4	25	75	100

Objectives:

- To impart the knowledge of computer programming with algorithmic approach.
- Learning the concept of data structures and its operations.

UNIT I : Stacks and Queues

(12 hours)

The Stack & Queue abstract data type– A Mazing Problem – Evaluation of Expressions– Multiple Stacks and Queues. **Linked Lists:** Singly Linked Lists –Circular list- Linked Stacks and Queues – Polynomials- Doubly Linked List.

UNIT II : Trees

(12 hours)

Basic Terminology – Binary Trees- Properties - Representations - Binary Tree Traversal – Additional Binary tree operations-Threaded Binary Trees.

UNIT III : Graphs

(12 hours)

Definitions and Representations – Elementary Graph operations-Minimum Cost Spanning Trees – Shortest Path and Transitive Closure – Activity Networks.

UNIT IV: Divide and Conquer

(12 hours)

The General Method – Binary Search – Finding the Maximum and Minimum – Merge Sort – Quick Sort – Selection Sort.

UNIT V: The Greedy Method

(12 hours)

The General Method – Knapsack problem-Tree vertex Splitting-job sequencing with deadlines- Minimum cost spanning trees-optimal storage on tapes-optimal merge patterns-single source shortest path.

Text Books:

1. Ellis Horowitz , Sartaj Sahni & Dinesh Mehta – “Fundamentals of Data structures in C++” - 2nd Edition - Universities Press 2007.
2. Ellis Horowitz , Sartaj Sahni & Sanguthevar Rajasekaran- “Fundamentals Of Computer Algorithms”- 2nd Edition- Universities Press 2007.

Reference Books:

1. Yedidyah langsam, Moshe J.Augenstein and Aaron- “Data structures using C “– PHI.
2. Seymour Lipschutz – “Data Structures” - TataMcGrawhill – Year 2006.
3. Jean Paul Tremblay and Paul G Sorenson – “An Introduction to Data structure with Application” - THM, II Edition – 1991.

Course Code	Course Title	H	C	I	E	T
17U3FAC4	COMPUTERIZED ACCOUNTING	3	2	25	75	100

Objectives:

- To impart the knowledge of computerized financial management.
- Learning the concepts of accounts and accounting software.

Unit – I : Introduction to Accounting (9 hours)

Principles of Book keeping – Day Books and Ledgers – Cash Book – Petty Cash Book – Trial Balance.

Unit – II : Preparation of Final Accounts (9 hours)

Preparation of Trading and Profit & Loss Account – Preparation of Balance Sheet (Simple Problems only)

Unit – III : Ratio Analysis (9 hours)

Meaning – Importance – Types - Liquidity Ratios - Solvency Ratio - Activity Ratios. (Simple problems only)

Unit – IV : Preparation of Accounts through Accounting Software (9 hours)

Creation of Company – Creation of Group – Creation of Ledger.

Unit – V: Voucher Creation and Display of Final Accounts in Accounting Software (9 hours)

Creation of Vouchers - Types of Voucher – Alteration of Voucher – Deletion of Voucher .
Preparation of Final Accounts through Tally – Trial Balance – Profit and Loss Account – Balance Sheet at the Gateway of Tally - Methods of showing Balance sheet.

Text Book:

1. Dr. S.A.N Shazuli Ibrahim, Financial Accounting – I, PASS Publications, Madurai.
2. Dr. P. Rizwan Ahmed, Tally ERP 9, Margham Publications, Chennai.

Books for Reference

1. S.P. Jain & K.L Narang, “*Advanced Accountancy*” Vol-I, Nineteenth Edition, 2015, Kalyani Publishers, Mumbai.
2. R.L. Gupta & M. Radhaswamy, “*Advanced Accountancy*” Vol-I, 2015, Sultan Chand & Sons, New Delhi.
3. Nellai Kannan C, “*Tally*”, 2004, Nels Publications.
4. Shraddha Singh & Navneet Mehra, “*Tally.ERP 9- Power of Simplicity*”, 2014, ITC Publication.

Course Code	Course Title	H	C	I	E	T
17U3FNM1	NON MAJOR ELECTIVE(NME) INTRODUCTION TO INTERNET	2	2	25	75	100

Objectives:

- To impart the knowledge of basics of Internet.
- Learning the various aspects of Internet design and functionalities.

Unit I: Introduction to Internet

(6 Hours)

Internet- Growth of Internet and Arpanet - Owners of the Internet -Anatomy of Internet – History of WWW - Basic Internet Terminologies – Net etiquette - Internet Applications - Commerce on the Internet – Governance on the Internet - Impact of Internet on Society.

UNIT II: Browsers and Search engines

(6 Hours)

Browsers – browser- Introduction – Parts of a browser window -Running a browser - working with a Browser. Search engines: What is search engine? - Types of search engines - Search and Meta search engines.

Unit III: E-mail

(6 Hours)

E-mail - E-mail Networks and Servers - E-mail Protocols - Structure of E-mail - Attachments – E-mail Clients - E-mail Clients - web based E-mail-Address book – Signature File.

UNIT IV: HTML Programming Basics

(6 Hours)

Introduction to HTML – HTML browsers - Different versions of HTML-HTML tags - Document overview - Header elements - Section headings –

UNIT V: HTML Programming Basics

(6 Hours)

Block headings - Lists-Inline elements – Images - working with Tables, Forms, Frames.

Text book:

Internet Technology and Web design, Ramesh Bangia, Firewall Media, (An imprint of Lakshmi Publications Pvt. Ltd.), Third Edition, 2011.

Unit 1: Chapter 1.2

Unit 2: Chapter 3 & Chapter 4

Unit 3: Chapter 5(5.6), Chapter 8(8.11 &8.13)

Unit 4: Chapter 5 (5.1) & Chapter 6

Unit 5: Chapter 9

Reference Books:

1.The Internet Book, Douglas E. Comer, Fourth Edition, PHI Learning Pvt. ltd. , New Delhi, 2009.

2.Using the Internet the Easy Way, Young Kai Seng, Minerva Publications, First Edition, 2000.

3.Fundamentals of Information Technology By Alexis Leon and Mathews Leon, Vikas Publishing House Pvt. Ltd., Revised Edition.

Course Code	Course Title	H	C	I	E	T
17U4FMC8	PROGRAMMING IN JAVA	5	4	25	75	100

Objectives:

- To impart the knowledge of OOPs approach in computer programming.
- Learning the concept and controls of Java language.

Unit – I: Introduction

(12 hours)

Java history – Java Features – Simple Java Programs – Class declaration – Tokens – Comments – Statements – JVM – Implementing Java programs – Command line arguments – Constants, Variables and Data types – Operators and Expressions – Decision making statements – Simple if statements – If-else statements – Nesting if-else statements – else-if ladder – switch statement – ternary operator – Looping – While, do-while, for loop statements.

Unit – II: Class & objects

(12 hours)

Creation of class – Objects and methods – Accessing class members – Constructors – Method Overloading – Overriding – Static members – Inheritance – Interface.

Unit – III: Arrays

(12 hours)

Arrays – Types – Length – Strings – Strings Manipulations – Vector – Vector classes – Wrapper class – Enumerated types – Java API Packages – System package – Creating and accessing user defined and system package – Managing errors and exceptions.

Unit – IV: Input / Output

(12 hours)

Managing I/O files in Java – Stream I/O – Byte stream class – Character stream class – creation of files – File handling in Java – Multi threaded programming – Multithreads in Java – Thread class – Lifecycle of thread – Thread exceptions – Priority.

Unit – V: Applets & Graphics Programming

(12 hours)

Applet programming – Introduction – Preparing to write Applets – Building applet code – Applet life cycle – Creating an executable applet – Applet tag – Running the applet – Passing parameters – Displaying numerical values – Getting input from the user – Graphics programming – Introduction – the Graphics class – Lines and rectangles – Circles and ellipse – Drawing arcs – Drawing polygons.

Text Book:

E. Balagurusamy – “Programming with Java” – V Edition., - MGH.

Reference Books:

1. Deital & Deital – “Java How to Program” – Pearson education-2003.
2. Herbert Schildt - “Java A Beginner’s Guide” - IV Ed., TMH.
3. Patrick Naughton, Herbert Schildt – “Java Complete Reference2 – V Ed., - TMH.

Course Code	Course Title	H	C	I	E	T
17U4FMC9	DATA COMMUNICATION & COMPUTER NETWORKS	4	4	25	75	100

Objectives:

- To impart the knowledge of data communication and computer networks.
- Learning the concept and the various layers of a computer network design.

UNIT I: DATA COMMUNICATION (12 hours)

Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies – Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences.

UNIT II : DATA LINK LAYER (12 hours)

Error – detection and correction – Parity – LRC – CRC – Hamming code – low Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET–Bridges.

UNIT III: NETWORK LAYER (12 hours)

Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers.

UNIT IV : TRANSPORT LAYER (12 hours)

Duties of transport layer – Multiplexing – De -multiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services(QOS)– IntegratedServices.

UNIT V: APPLICATION LAYER (12 hours)

Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW – Security – Cryptography.

TEXT BOOK:

Behrouz A. Forouzan, “Data communication and Networking”, Tata McGraw-Hill, 2004.

REFERENCE BOOKS :

1. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.
2. Larry L.Peterson and Peter S. Davie, “Computer Networks”, Harcourt Asia Pvt. Ltd., Second Edition.
3. Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth Ed.,2003.
4. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

Course Code	Course Title	H	C	I	E	T
17U4FMC10	WEB PROGRAMMING	4	4	25	75	100

Objectives:

- To impart the knowledge of web programming.
- Learning the .

UNIT I

(12 hours)

Internet Basics: Basic Concepts – Internet Domains – IP Address – TCP/IP Protocol – The WWW – The Telnet — Introduction to HTML: Web server - Web client / browser - Tags – Text Formatting – Lists – Tables – Linking Documents - Frames.

UNIT II

(12 hours)

JavaScript: JavaScript in Web Pages – The Advantages of JavaScript – Writing JavaScript into HTML – Syntax – Operators and Expressions – Constructs and conditional checking – Functions – Placing text in a browser – Dialog Boxes – Form object’s methods – Built in objects – user defined objects.

UNIT III

(12 hours)

XML: Comparison with HTML – DTD – XML elements – Content creation – Attributes –Entities – XSL – XLINK – XPATH – XPOINTER – Namespaces – Applications – integrating XML with other applications.

UNIT IV

(12 hours)

UNIT V

(12 hours)

ASP: Introduction to ASP – Objects – Components – Working with HTML forms – Connecting to Microsoft SQL Server & MS–Access Database – SQL statements with connection object – Working with record sets.

Text Books

1. “Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI”, Ivan Bayross, BPB Publication. UNIT I & II
2. “XML Bible”, Elliotte Rusty Harold, 2nd Edition, Wrox Publication. UNIT III
3. “Beginning Java Server Pages”, Vivek Chopra, Sing Li, Rupert Jones, Jon Eaves, John T. Bell, Wrox Publications. UNIT IV
4. “Practical ASP”, Ivan Bayross, BPB Publication. UNIT V

Course Code	Course Title	H	C	I	E	T
17U4FMC11	COMPUTER ORGANIZATION	4	4	25	75	100

Objectives:

- To impart the knowledge of organization of computer.
- Learning the concept of components of a computer system.

UNIT I: BASIC STRUCTURE OF COMPUTERS

(12 hours)

Functional units – Basic operational concepts – Bus structures – Performance and metrics – Instructions and instruction sequencing – Hardware – Software Interface – Instruction set architecture – Addressing modes – RISC – CISC. ALU design – Fixed point and floating point operations.

UNIT II: BASIC PROCESSING UNIT

(12 hours)

Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Micro programmed control – Nano programming.

UNIT III: PIPELINING

(12 hours)

Basic concepts – Data hazards – Instruction hazards – Influence on instruction sets – Data path and control considerations – Performance considerations – Exception handling.

UNIT IV: MEMORY SYSTEM

(12 hours)

Basic concepts – Semiconductor RAM – ROM – Speed – Size and cost – Cache memories – Improving cache performance – Virtual memory – Memory management requirements – Associative memories – Secondary storage devices.

UNIT V: I/O ORGANIZATION

(12 hours)

Accessing I/O devices – Programmed Input/Output -Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB), I/O devices and processors.

TEXT BOOK:

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”, Fifth Edition, Tata McGraw Hill, 2002.

REFERENCES:

1. David A. Patterson and John L. Hennessy, “Computer Organization and Design: The Hardware/Software interface”, Third Edition, Elsevier, 2005.
2. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Sixth Edition, Pearson Education, 2003.
3. John P. Hayes, “Computer Architecture and Organization”, Third Edition, Tata McGraw Hill, 1998.

Course Code	Course Title	H	C	I	E	T
17U4FAC5	NUMERICAL METHODS	3	2	25	75	100

Objectives:

- To impart the knowledge of computer arithmetic.
- Learning various algebraic and numerical methods.

UNIT I: Algebraic and Transcendental Equations (9 Hours)

Errors in numerical computation-Iteration method-Bisection method-Regula-Falsi method-Newton-Raphson method-Horner's method.

UNIT II: Simultaneous Equations (9 Hours)

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 (9 Hours)

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

UNIT IV: Numerical Differentiation and Integration (9 Hours)

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

UNIT V: Numerical Solution of Ordinary Differential Equations (9 Hours)

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.Thangapandi Issac, A.Somasundaram, SCITECH publications.

Chapters:

Unit I: Chapter-3

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

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

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

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

Reference Book:

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

Course Code	Course Title	H	C	I	E	T
17U4FNM2	PC SOFTWARE	2	2	25	75	100

Objectives:

- To impart the knowledge of basic computer software.
- Learning various features of Word and PowerPoint.

Unit I: Introduction to MS Word

(6 Hours)

Getting started with Word: Starting Word 2000 - Viewing Layouts- Typing, Navigating Documents and Selecting Text.

Unit II: Creating Professional Documents

(6 Hours)

Setting up the page – Customizing the page. Advance Tools in Word2000: proofing Tools – Using Tables - Mail merge – using Macros.

Unit III: Introduction to MS PowerPoint

(6 Hours)

Getting started with PowerPoint: Usefulness of PowerPoint for Presentations – Starting a PowerPoint Presentation- Enhancing the presentation.

Unit IV: Features of PowerPoint

(6 Hours)

ClipArt and WordArt in PowerPoint – Working with Charts and tables.

Unit V: Advanced Concepts in PowerPoint

(6 Hours)

Advanced Concepts in PowerPoint: Importing and exporting charts - Giving final touches Creating Presentation for the Internet- Automatic work with Macros.

Text Book:

“Working with MS Office 2000” by Content Development Group. Tata McGraw-Hill Publishing Company Limited.

Reference Book:

“Pc Software for Windows 98 Made Simple”- Tata McGraw-Hill Publishing Company Limited.

SEMESTER-V

Course Code	Course Title	H	C	I	E	T
17U5FMC12	RELATIONAL DATABASE MANAGEMENT SYSTEM	5	4	25	75	100

Objectives:

- To understand the fundamentals of data models and concepts of database system
- To develop a programming skill of SQL

Total: 75 Hours**Unit – I: Introduction****(15 Hours)**

Database System Applications – Purpose of Database Systems – View of Data – Database Languages – Relational Databases – Database Design – Object based and Semi structured databases -Data Storage and Querying – Transaction Management – Data Mining and Analysis – Database Architecture – Specialty Databases-Database users and Administrators – History of Database Systems.

Unit – II: Relational Databases**(15 Hours)**

Relational Model: Structure of Relational Databases – Fundamental Relational Algebra Operations – Additional Relational Algebra Operations – Extended Relational Algebra Operations – Null Values – Modification of the Database. **SQL:** Background -Data Definition – Basic Structure of SQL Queries – Set Operations – Aggregate Functions – Null Values – Nested Sub queries – Complex Queries – Views – Modification of the Database – Joined Relations.

Unit – III: Database Design**(15 Hours)**

Other Relational Languages: The Tuple Relational Calculus -The Domain Relational Calculus – Query-By-Example-Data log. **Database Design and E-R Model:** Overview of the Design Process – The Entity Relationship Model – Constraints – Entity Relationship Diagrams – Entity Relationship Design Issues – Weak Entity Sets – Extended E-R Features.

Unit – IV: Normalization**(15 Hours)**

Features of Good Relational Database Designs – Atomic Domains and First Normal Form – Decomposition using Functional Dependencies – Functional Dependency Theory – Keys and Functional dependencies: Boyce Codd Normal form-BCNF and Dependency Preservation-Third Normal Form.

Unit – V: Storage and File Structure**(15 Hours)**

Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary Storage – Storage Access – File Organization – Organization of records in Files – Data-Dictionary Storage.

Text Book:

Abraham Silberschatz, Henry F. Korth, S. Sudharshan –“Database System Concepts”,VI Ed., TMH.

Chapters:

Unit I : 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 1.12, 1.13.

Unit II: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11.

Unit III: 5.1,5.2, 5.3, 5.4, 6.1,6.2, 6.3, 6.4, 6.5, 6.6, 6.7

Unit IV: 7.1, 7.2, 7.3, 7.4

Unit V: 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8

Reference Books:

1. Raghu RamaKrishnan,Johannes Gehrke-, “**Database Management System**”- Mcgraw Hill,Third Edition.
2. Leon & Leon -“**DBMS**” ,New Edition ,Leon vikas Pub.
3. Thomas Connolly -“**Database Systems**”-,Addison Wesley–NewPrint.
4. J.Keerthika -“**Database Management Systems**”, Excellent publishers.

Objectives:

Course Code	Course Title	H	C	I	E	T
17U5FMC13	INFORMATION SECURITY	5	5	25	75	100

- To understand the basics of Information Security
- To know the technological accepts of Security Method

Total:75 Hours**Unit I: Information security****(15 Hours)**

The Importance of Information Protection-The Evolution of information Security-Justifying Security Investment: Business Agility, Cost Reduction, Portability-Security Methodology-Security Program:Authority-Framework-Assessment-planning-Action-Maintenance-The Impossible job-The weakest Link-Strategy and Tactics-Business Process vs Technical controls.

Unit II: Risk Analysis**(15 Hours)**

Threat Definition: Threat Vectors, Threat Sources and Targets-Types of Attacks: Malicious Mobile code- Advanced persistent Threats (APTS)- Manual Attacks- Risk Analysis

Unit III: Security Policies**(15 Hours)**

Security Policies: Security Policy Development- Security policy Contributors- Security policy Audience- Policy Categories- Frameworks- Security Awareness- Importance of Security Awareness,-objectives of an Awareness Program- Increasing Effectiveness- Implementing the Awareness Program- Enforcement- Policy Enforcement for Vendors-policy Enforcement for Employees- Software-Based Enforcement- Data Privacy Polices- Data Integrity polices

Unit IV Security Design & Organization**(15 Hours)**

The CIA Triad and other Models: Confidentiality-Integrity-Availability-Additional concepts- Defense models: The Lollipop model-The Onion model-Security Organization: Roles and responsibility: Security positions-Security incidence response Team-Managed security services.

Unit V:Authentication and Authorization**(15 Hours)**

Authentication: Usernames and Passwords-Certificate based Authentication-Extensible authentication Protocol(EAP)-Biometrics-Additional users for Authentication Authorization: User Rights-Role-Based Authorization (RBAC)-Access Control Lists(ACLs)-Rule-Based Authorization

Text Book:

“Information Security” The Complete Reference 2nd Edition-Mark Rhodes –Ousley.

Chapters:**Unit I : 1****Unit II: 2****Unit III: 5****Unit IV: 4, 6****Unit V: 7****Reference Books:**

1. Mark Stamp -“Information Security”, Willey 2005
2. E.Whitman and Herbert J.Mattord -“Principles of Information Security” ,Michael 4th edition

B.Sc(I.T)**SEMESTER - V****Objectives:**

Course Code	Course Title	H	C	I	E	T
17U5FMC14	SOFTWARE ENGINEERING	5	5	25	75	100

- Understanding user conceptual models and development of better specifications.
- Improvement in design languages and reusable code

Total:75 Hours**Unit1: INTRODUCTION****(15 Hours)**

Definitions- Some Size Factors: Total Effort Devoted to Software, Distribution of Effort, project size Categories, How Programmers Spend their time -Quality and Productivity factors-Managerial issues.

Unit II: PLANNING A SOFTWARE PROJECT**(15 Hours)**

Defining the problem: Goals and Requirements –Developing a solution strategy-Planning the development process: The phased Life-cycle Model, Milestones,,Documents,and Reviews, The Cost Model, The Prototype Life-Cycle Model, Successive versions- planning an organizational structure-other planning Activities.

Unit III: SOFTWARE COST ESTIMATION**(15 Hours)**

Software cost factors-Software cost estimation techniques-Staffing level estimation –Software requirements definition-The Software requirements specification-Formal Specification techniques.

Unit IV: SOFTWARE DESIGN**(15 Hours)**

Fundamental design concepts-Modules and modularization criteria-Design notations-Design techniques-Real-time and distributed system design-Test plans-Milestones, walkthroughs & inspections.

Unit V: SOFTWARE MAINTENANCE**(15 Hours)**

Enhancing Maintainability during development - Managerial aspects of software maintenance- Configuration management - Source-code metrics - other Maintenance tools and Techniques.

Text Book:

Richard Fairley-“Software Engineering concepts”-MGH

Chapters:

Unit-I: 1.2, 1.3, 1.4

Unit-II: 2.1, 2.2, 2.3, 2.4, 2.5

Unit-III: 3.1, 3.2, 3.3, 4.1, 4.2

Unit-IV: 5.1, 5.2, 5.3, 5.4, 5.6, 5.7, 5.8

Unit-V: 9.1, 9.2, 9.3, 9.4, 9.5

Reference Books:

1. H.C.shooman-“Software engineering design”-MGH.
2. Roger.S.Pressman-“Software Engineering”-MGH-IVED.

SEMESTER-V

Course Code	Course Title	H	C	I	E	T
17U5FMC15	DOT NET TECHNOLOGIES	5	4	25	75	100

Objectives:

- To understand the concept of GUI Design tools, also to make them aware of controls in VB.NET
- Code programs and develop interface using VB.NET.

Total: 75 Hours**Unit - I: Introduction to VB.NET****(15 Hours)**

Getting started in Visual Basic to .Net –Starting Visual Basic Dot Net-Creating and Running very first application-**IDE:** What is IDE-Using the Auto hide facility–Using the Properties windows– Setting the properties of forms and controls–Using the solution explorer-Writing an event procedure-The Standard Toolbar. Setting properties using the Properties Window: Classification of Properties.

Unit - II: Control structure & Looping**(16 Hours)**

Variables and Data types-Text box control–Radio button control-Programming Statements :IF...Then ,IF...THEN...END IF, IF...THEN...ELSE...END IF–The MsgBox() function-The InputBox() function-List box control-Programming Statement: Select Case–Check box control-Iteration Statements-Do While Loop- Do Until Loop- Do Loop Until-For Next-Arrays.

Unit - III: Menus and Dialog Boxes**(16 Hours)**

Basic elements of menus-Generic procedure of creating menus-Creating a simple menu application. Structured Programming:What is Structured Programming-Events, Subroutines & Functions-Scope of variables-Scope of procedures-Elementary and composite data types.

Unit - IV: Object-Oriented programming**(16 Hours)**

What is OOPS-Implementing OOPS-Inheritance overriding-Collections. Working with files: Introduction to files-Classification of files-Handling files and folders using functions-File processing using streams-Advanced Techniques in Visual Basic Dot Net:Single document interface and multiple document interface.

Unit – V: Data Access with ADO.Net**(12 Hours)**

What are databases-Connections, Data Adapters and Datasets-Accessing Data with Server Explorer-Accessing Data with Data Adapters and Datasets-Working with ADO.Net-Overview of ADO.Net Objects.

Text Books:

1. “Visual Basic Dot Net”- Shirish Chavan, Pearson Edition, Fourth Edition.
2. “Visual Basic Dot Net Black Book” - Steven Holzner, Wiley Press.

Chapters:

Unit – I: 1.5, 1.6, 2.2, 2.5, 2.14, 2.15, 2.16, 2.18, 2.22, 3.1.

Unit – II : 5.1,5.11,5.12,5.13,5.14,6.3,6.7,6.9,6.10,7.2,7.3,7.5,7.6,7.8,7.9,7.11.

Unit – III: 9.1, 9.2, 9.3, 10.1, 10.2, 10.3, 10.4, 10.7.

Unit – IV: 11.1, 11.2, 13.1, 13.2, 13.4, 13.10, 14.1.

Unit – V: 21 → Textbook 2

} Textbook 1

Reference Books:

1. “Visual Basic Dot Net-A Beginner’s guide”- Jeffery Kent -Tata McGraw Hill, First Edition .
2. “Visual Basic Dot Net Step by Step”- Michael Halvorson ,Prentice Hall of India Pvt, First Edition,2002.
3. “The Complete reference Visual Basic Dot Net “Jeffrey R.Shapiro- Tata McGraw Hill, Sixteenth Reprint,2010
4. “Visual Basic Dot Net”- John Smiley Tata McGraw Hill, First Edition 2002.

B.Sc (IT)**SEMESTER - V****Objectives:**

Course Code	Course Title	H	C	I	E	T
17U5FME1	ELECTIVE-I. (A) PROGRAMMING IN ASP	4	4	25	75	100

- To impart the knowledge of ASP Programming.
- Learning the concepts of Active Server Pages and ADO controls.

Total: 60 Hours**Unit – I The Basic of ASP Programming****(12 Hours)**

Active Server Pages: Need for Active server pages – **The Development Environment:** Automated Development - **Active Server Pages:** ASP Objects – ADO Objects – ASP Components -Relational Database and other Data Sources – Developing on-line Application – Client/Server or Tiered Applications – Virtual Directories – **The Web Site as Communications Channel:** Development Issues – **ASP and the Web programming basics:** Web sites coding languages – Static Web Pages – Dynamic Applications – Laying Out the Web Site.

Unit – II The Request and Response Objects**(12 Hours)**

Web based communication: The Request object – Accessing values from forms or URLs- The Server Variables Collections – The Cookies Collections – The Client Certificate Collections-**The Response object:** Response Object Collections – Response Object Properties – Response Object Methods – Writing Data to the Browser – **The Server Object:** The Server object – The ASP Error Object – **The Application and Session Object: Visitor Status and State:** Maintaining State with Cookies – Scope – Default and Virtual ASP Applications – The Application Object – The global.asa File – Using The Application Object – ASP Sessions – The Session Object – Using the Session Object in an Application.

Unit – III Active Server Components and ADO**(12 Hours)**

The Scripting Object Model and SOM Objects: **The Scripting Object Model:** Creating Objects- - The Dictionary Objects – The Scripting: FileSystemObject Object – The Drive Objects – The Folder Object – The File Object – The Scripting: TextStream Object. **Major Active Server Components:** **Active Server Components:** Active Server Components - Creating Server Components with ASP – The Adrotator Component- The Browser Capabilities Component – The Content Linking Components – The Content Rotator Components- **More Active Server components:** More Microsoft IIS Server Components – The Counters Components – Using the Counters Components – The Page Counter Components – The Tools Components – The Logging Utility Components – Third-Party Components ASP – Using These ASP Components.

Unit – IV The ADO Connection – Related Objects**(12 Hours)**

Interactivity and latency: Optimizing Database Interactions – The Connection Object – Advanced Error – Handling Techniques – The Command Object – Record Set Cursors – Record Set Locking – Stored Procedures – The Parameters Collections.

Unit V The ADO Record Set–Related Objects

(12 Hours)

The Record set Object: Record set Methods and Properties- the Record set Navigation and Manipulation Operations – **The Stream and Record Object:** Record Object Properties and Methods- Stream Object Properties and Methods.

Text Book:

Dave Mercer – ASP3.0 a Beginner’s Guide – TMH 2012.

Chapters:

Unit I: 1, 2

Unit II: 3, 4, 5

Unit III: 6, 7, 8

Unit IV: 10

Unit V: 11

Reference Books:

1. Beginning ASP 3.0 – Chris Ullman, Wrox Publications, and Edition 2000.
2. Designing Active Server Pages – Scott Mitchell, O’REILLY Publications, and Edition 2000.
3. Sams Teach Yourself Active Server Pages 3.0 in 21 Days – Scott Mitchell and James Atkinson, 1st Edition, Sams Publications.
4. Master Active server Pages 3 –Russell Jones, Edition 2000, Sybex Publications

Course Code	Course Title	H	C	I	E	T
17U5FME1	ELECTIVE-I. (B) CLOUD COMPUTING	4	4	25	75	100

Objectives:

- To impart the knowledge of cloud computing.
- Understand the network from remote server.

**Total: 60 Hrs
(12 Hours)**

Unit I: Introduction

Web 2.0 and the cloud – distinguish cloud types – exploring uses of the cloud – introducing scalability – introducing virtualization – collecting processing power through grid computing – getting started with SaaS – understanding open SaaS solution – understanding service – oriented architecture.

Unit II: Platform and Infrastructure Service

(12 Hours)

IT evolution leading to the cloud – benefits of PaaS solution – understanding IaaS – improving performance through load balancing – system and storage redundancy – utilizing cloud-based NAS devices – advantages of IaaS solution – server types within an IaaS solution – understanding single sign-on (SSO) – understanding open ID – mobile ID management.

Unit III: Data storage in cloud

(12 Hours)

Examining the evolution of network storage – understanding cloud-based data storage – advantages and disadvantages of cloud-based data storage – getting past the fear of cloud-based data – cloud-based backup systems – industry specific cloud-based data storage – cloud-based database solution – cloud-based block storage.

Unit IV: Securing Cloud

(12 Hours)

General security advantages of cloud-based solutions – introducing business continuity and disaster recovery – understanding distributed denial of service (DDOS) attacks – packet sniffing – man –in-the-middle attack – monitoring device screens – malicious employees – hypervisor attack – guest – hopping attack – SQL injection attack – physical security – threads.

Unit V: Mobile Cloud Computing

(12 Hours)

The evolution of mobile computing – the mobile cloud eco system – introducing mobile players – revisiting the role of HTML5 – mobile development considerations – understanding corporate governance – extending governance to information technology.

Text Book:

Kris Jamsa “Cloud Computing” First Edition – 2012, Library of Congress Cataloging in – Publication.

Chapters:

Unit - I: 1, 2

Unit - II: 3, 4, 5

Unit - III: 6

Unit - IV: 9

Unit - V: 14

Reference Books:

1. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski “Cloud Computing: Principles and Paradigms” Wiley.

2. Ray J Rafaels “Cloud Computing: From Beginning to End”, CreateSpace Independent Publishing Platform (2015).
3. Michael J. Kavis “Architecting the Cloud: Design Computing Models (SaaS, PaaS, and IaaS)”, Wiley.
4. Anthony Velte, Robert C. Elsenpeter, and Toby J. Velte “Cloud Computing, A Practical Approach”, Tata McGraw-Hill Edition 2010.

Course Code	Course Title	H	C	I	E	T
17U5FME1	ELECTIVE-I. (C) CRYPTOGRAPHY AND NETWORK SECURITY	4	4	25	75	100

Objectives:

- Learning the Cryptography Concepts and Algorithms.
- Understanding the Security Protocols in Network.

Total: 60 Hrs**Unit - I: Introduction and Traditional Symmetric-Key Ciphers (12 Hours)**

Security Goals: Confidentiality – Integrity – Availability – Attacks: Attacks Threatening Confidentiality – Attacks Threatening Integrity – Attacks Threatening Availability – Passive versus Active Attacks – Services and Mechanisms: Security Services – Security Mechanisms – Relation between Services and Mechanisms – Techniques: Cryptography – Steganography – Traditional Symmetric-Key Ciphers: Introduction: Kerckhoff's Principle – Cryptanalysis – Categories of Traditional Ciphers – Substitution Ciphers: Monoalphabetic Ciphers – Polyalphabetic Ciphers – Transposition Ciphers: Keyless Transposition Ciphers – Keyed Transposition Ciphers – Combining Two Approaches – Stream and Block Ciphers: Stream Ciphers – Block Ciphers – Combination.

Unit - II: Modern Symmetric-Key Ciphers and DES (12 Hours)

Modern Block Ciphers: Substitution or Transposition – Block Ciphers as Permutation Groups – Components of a Modern Block Cipher – S-Boxes – Product Ciphers – Two Classes of Product Ciphers – Attacks on Block Ciphers – Modern Stream Ciphers: Synchronous Stream Ciphers – Nonsynchronous Stream Ciphers – Data Encryption Standard: Introduction: History – Overview – DES Structure: Initial and Final Permutations – Rounds – Cipher and Reverse Cipher – Examples – DES Analysis: Properties – Design Criteria – DES Weaknesses – Multiple DES: Double DES – Triple DES – Security of DES: Brute-Force Attack – Differential Cryptanalysis – Linear Cryptanalysis.

Unit - III: Integrity and Authentication (14 Hours)

Message Integrity: Document and Fingerprint – Message and Message Digest – Difference – Checking Integrity – Cryptographic Hash function Criteria – Random Oracle Model: Pigeon Hole Principle – Birthday Problems – Attacks on Random Oracle Model – Attacks on the Structure – Message Authentication: Modification Detection Code – Message Authentication Code (MAC) – Digital Signature: Comparison: Inclusion – Verification Method – Relationship – Duplicity – Process: Need for Keys – Signing the Digest – Services: Message Authentication – Message Integrity – Nonrepudiation – Confidentiality – Attacks on Digital Signature: Attack Types – Forgery Types – Entity Authentication: Introduction: Data-Origin versus Entity Authentication – Verification Categories – Entity Authentication and Key Management – Passwords: Fixed Password – One-Time Password – Challenge-Response: using Symmetric-Key Cipher – Using Keyed-Hash Function – Using Asymmetric-key Cipher – Using Digital Signature – Biometrics: Components – Enrollment – Authentication – Techniques – Accuracy – Applications.

Unit - IV: Security at the Transport Layer: SSL and TLS (11 Hours)

SSL Architecture: Services – Key Exchange Algorithms – Encryption/Decryption Algorithms – Hash Algorithms – Cipher Suite – Compression Algorithms – Cryptographic Parameter Generation – Sessions and Connections – Four Protocols: Handshake Protocol – ChangeCipherSpec Protocol – Alert Protocol – Record Protocol – SSL Message Formats:

ChangeCipherSpec Protocol – Alert Protocol – Handshake Protocol – Application Data – Transport Layer Security: Version – Cipher Suite – Generation of Cryptographic Secrets – Alert Protocol – Handshake Protocol – Record Protocol.

Unit - V: Security at the Network Layer: IPSec

(11 Hours)

Two Modes: Comparison – Two Security Protocols: Authentication Header (AH) – Encapsulating Security Payload (ESP) – IPv4 and IPv6 – AH versus ESP – Services provided by IPSec – Security Association: Idea of Security Association – Security Association Database (SAD) – Security Policy: – Security Policy Database – Internet Key Exchange (IKE): – Improved Diffie-Hellman Key Exchange – IKE Phases – Phases and Modes – Phase I - Main Mode – Phase I – Aggressive Mode – Phase II – Quick Mode – SA Algorithms – ISAKMP: General Header – Payloads.

Text Book:

Behrouz A. Forouzan – “Cryptography and Network Security” – Tata McGraw Hill Edition – 2009.

Chapters:

Unit-I: 1, 3.

Unit – II: 5, 6.

Unit-III: 11, 13.1, 13.2, 13.3, 13.4, 14.1, 14.2, 14.3, 14.5

Unit-IV: 17.

Unit V: 18.

Reference Books:

1. William Stallings – “Cryptography and Network Security, Principle and Practices” – Prentice Hall – Thrid Edition, 2003.
2. Atul Kahate – “Cryptography and Network Security” – Tata McGraw Hill Edition.
3. Eric Maiwald – “Fundamentals of Network Security” – McGraw Hill Edition 2003.

Course Code	Course Title	H	C	I	E	T
17U5FME1	ELECTIVE-I.(D) CLIENT/SERVER COMPUTING	4	4	25	75	100

Objectives:

- To impart the knowledge of client/server computing.
- To learn the client components and categories of server.
- To understand the benefits of intelligent database.

Total:60 Hours**Unit - I: Introduction to Client/Server computing****(12 Hours)**

Client/Server computing introduction – Benefits of client/server computing. Evolution of client/server computing: Hardware trends – Software trends – Evolution of operating systems – Networking trends – Business considerations. Overview of client/server applications: Components of client/server applications – Classes of client/server applications – Categories of client/server applications – Factors for success.

Unit - II: The Client**(12 Hours)**

Client Hardware and Software: Client components – Client operating systems – GUI – Database access – Application logic. Client software products: GUI environments – Database access tools. Client Requirements: GUI design standards – Open GUI standards – Interface Independence – Testing Interfaces – Development aids.

Unit - III: The Server**(12 Hours)**

Server Hardware: Categories of servers – Features of server machines – Classes of server machines. Server Environment: Layers of software – Network management environment – Network computing environment – Extensions – Network operating system – Loadable modules. Server operating systems: OS/2 2.0 – Windows new technology – Unix-Based operating systems.

Unit - IV: Server Requirements and Data Management**(12 Hours)**

Server requirements: Platform independence – Transaction processing – Connectivity – Intelligent database – Stored procedures – Triggers – Load leveling – Optimizer – Testing and diagnostic tools – Reliability – Backup and Recovery mechanisms. Server Data Management and access tools: Data manager features – Data management software – Database gateway.

Unit - V: The Network and Development**(12 Hours)**

Overview of networking: Layers, Interfaces, and Protocols – Standard architecture – Network characteristics – Network management standards – LAN characteristics. LAN Hardware and Software: LAN hardware – Network operating systems. Application development tools.

Text Book:

Dawna Travis Dewire - “Client/Server Computing” - Tata McGraw- Hill International Editions.

Chapters:

Unit – I : 1,2,3,4

Unit – II : 5,6,7

Unit – III: 8,9,10

Unit – IV: 11, 12

Unit – V : 13,14,16

Reference Books:

3. Patrick Smith & Steve Guengerich - “Client/Server Computing”- PHI-II Edition 1994.
4. Subhash Chandra Yadav & Sanjay Kumar Singh, “An Introduction to Client/Server Computing”-New Age International publishers,2009.
5. Eric.J.Johnson,The Complete guide to “Client/Server Computing”, Prentice Hall,2001.

Course Code	Course Title	H	C	I	E	T
17U5FMP5	RDBMS LAB	3	3	50	50	100

Cycle 1

1. Display the user name.
2. Display the current date and time.
3. Find the floor and ceil value for a given number.
4. Find the rounded value for a given number.
5. Find the truncated value for a given number.
6. Find the cube value for a given number.
7. Find the ascii value for a given number.
8. Extract "d morning" from the string "good morning".
9. Find the number of months between given two dates.
10. Display all the records in the table customer.
11. Display all the records that are in the loan table whose amount is > 200000.
12. Display ano, cname for 'john' and 'leon'.
13. Display all the records that are in bname='chrompet'.
14. How many customers are getting their loan amount more than 300000.
15. Display all the customer whose name starts with 's'.
16. Find all the bank customers having a loan, an account or both at the bank.
17. Find all lno for loans made at the 'simmakal' branch with loan amount > 500000
18. Find the average balance for all accounts
19. Find the average account balance at each branch. Group all the records by the department.

Cycle 2

1. To list the entire loan relation in descending order of amount. if several loans have the same amount order them in ascending order by lno.
2. Find the customer name,loan no,loan amount for the customer who have an account and loan at the bank.
3. To generate single relation with all the information about full time employees using outer join.
4. To generate single relation with all the information about full time employees using left outer join.
5. To generate single relation with all the information about full time employees using right outer join.
6. To find all customers who do not have loan at the bank,but do not have an account at the bank.

7. Find the names of all branches that have an asset value greater than each branch i
'madurai'.
8. Delete all loans with loan amount between \$100000 and \$200000.
9. To create a view for each branch with the sum of the amounts of all loans at the branch.

PL/SQL Blocks

Cursor

10. Write a block to update the basic pay by adding rs.500 to that of existing amount whose job
is 'trainee'.

Procedure

11. Create a procedure to display the details of given employee. If no value is given, just
display the details of all the employees.

Trigger

12. Write the db trigger that prevents user to insert or delete or update the employee on
saturday or sunday.

Course Code	Course Title	H	C	I	E	T
17U5FSM5	DOT NET PROGRAMMING LAB	3	3	50	50	100

1. Write a program to convert the given decimal number into binary,octal,and hexadecimal numbers.
2. Write a program to develop a calculator with basic operations.
3. Write a program to create menus in a form using menu editor.
4. Write a program to add the items to list box and move the selected item from the list box to the combo box.
5. Design a form using common dialog control to display the save and open dialog box.
6. Write a program for obtaining root directory and current directory.
7. Write a program to use a tool bar to set editor properties.
8. Write a program to create and reading text file.
9. Write a program to implement a binary search using collection class.
10. Write a program to create an employee details with database connectivity.

Course Code	Course Title	H	C	I	E	T
17U6FMC16	ANDROID PROGRAMMING	5	5	25	75	100

Objectives:

- To impart the knowledge of Android Programming.
- Learning the concept and operations of Android Applications.

Total: 75 Hours**Unit I Fundamentals of Android Development (20 Hours)**

Introduction to Android: The android 4.1 Jelly Bean SDK – Understanding the Android Software Stack – Installing the Android SDK – Creating Android Virtual Devices – Using the Text View Control – Using The Android Emulator – The Android Debug Bridge (ADB) – Launching Android Applications on a Hand Set. **Basic Widgets:** Understanding the role of Android Project Files-understanding Activities – Role of the Android Manifest Editor – Creating the user interface – Commonly used layouts and controls – Event Handling – Displaying Messages Through Toast – Creating and Starting an Activity – Using the Edit Text control – Choosing options with Checkbox – Choosing mutually exclusive items using Radio Buttons.

Unit II Building Blocks for Android Application Design (20 Hours)

Laying Out Controls in Containers: Introduction to layouts – Linear layout – Relative Layout – Absolute Layout – using Image View – Frame Layout – Table Layout – Grid Layout – Adapting to Screen Orientation. **Utilizing resources and Media:** Creating an Image switcher Application – Scrolling through Scroll View – Playing Audio – Playing Video – Displaying progress with progress Bar – Using Assets.

Unit – III Using selection Widgets and Debugging (15 Hours)

Using list View – Using the spinner control – using the Grid view control – Creating an Image Gallery using the View pager control – Using debugging tool(DDMS)- Debugging Applications – Using the debug perspective. **Creating Interactive menus and ActionBar:** Menus and their types – Creating Menus through XML – Creating Menus through coding – Applying a Context Menu to a ListView – Using the Action Bar -Replacing Menus with the Action Bar- Creating a Tabbed Action Bar – Creating a Drop-Down List Action Bar.

Unit – IV Using DataBases (10 Hours)

Using the SQLiteOpenHelper Class – Accessing Databases with ADB – Creating a Data Entry Form.

Unit – V Advanced Android Programming Internet, Entertainment, and Services**(15 Hours)**

Displaying Web Pages and Maps: Displaying Web Pages – Using the WebViewClient Class – Using Google Maps

Text Book:

Android Programming - Unleashed – B.M. Harwani – Pearson Education 2013.

Chapters:

Unit I: 1, 2

Unit II: 3, 4

Unit III: 5, 7

Unit IV: 8

Unit V: 10

Reference Books:

1. Android Programming for Beginners – John Horton, First Edition, Packt Publishing.
2. Prasannakumar Dixit – Android 2014, Vikas Publishing Pvt Ltd.,
3. Wei-Menglee – Beginning Android 4 Application Development, 2014 Wiley India Pvt Ltd.,
4. Android Programming: The Big Nerd Ranch Guide – Bill Phillips and Chris Stewart – O'Reilly Media Publishers, Third Edition.

Course Code	Course Title	H	C	I	E	T
17U6FMC17	DATA MINING AND DATA WAREHOUSING	5	4	25	75	100

Objectives:

- Understanding the concepts of Data Warehousing and Data Mining
- Understanding various Data Mining Algorithms.

Total: 75 Hrs**Unit - I: Introduction to Data Mining and Data****(15 Hours)**

Introduction – Why Data Mining – Moving toward the Information Age – Data Mining as the Evolution of Information Technology – What Is Data Mining – What Kinds of Data Can Be Mined – Database Data – Data Warehouses – Transactional Data – Other Kinds of Data – What Kinds of Patterns Can Be Mined – Class/Concept Description: Characterization and Discrimination – Mining Frequent Patterns, Associations, and Correlations – Classification and Regression for Predictive Analysis – Cluster Analysis – Outlier Analysis – Are All Patterns Interesting – Getting to Know Your Data – Data Objects and Attribute Types – What Is an Attribute – Nominal Attributes – Binary Attributes – Ordinal Attributes – Numeric Attributes – Discrete versus Continuous Attributes – Basic Statistical Descriptions of Data – Measuring the Central Tendency: Mean, Median, and Mode – Measuring the Dispersion of Data: Range, Quartiles, Variance, Standard Deviation and Interquartile Range – Graphic Displays of Basic Statistical Descriptions of Data – Measuring Data Similarity and Dissimilarity – Data Matrix versus Dissimilarity Matrix – Proximity Measures for Nominal Attributes – Proximity Measures for Binary Attributes – Dissimilarity of Numeric Data: Minkowski Distance – Proximity Measures for Ordinal Attributes – Dissimilarity for Attributes of Mixed Types – Cosine Similarity.

Unit - II: Data Preprocessing**(14 Hours)**

Data Preprocessing: An Overview – Data Quality: Why Preprocess the Data – Major Tasks in Data Preprocessing – Data Cleaning – Missing Values – Noisy Data – Data Cleaning as a Process – Data Integration – Entity Identification Problem – Redundancy and Correlation Analysis – Tuple Duplication – Data Value Conflict Detection and Resolution – Data Reduction – Overview of Data Reduction Strategies – Wavelet Transforms – Principal Components Analysis – Attribute Subset Selection – Regression and Log-Linear Models: Parametric Data Reduction – Histograms – Clustering – Sampling – Data Cube – Aggregation – Data Transformation and Data Discretization – Data Transformation Strategies – Overview – Data Transformation by Normalization – Discretization by Binning – Discretization by Histogram Analysis – Discretization by Cluster, Decision Tree, and Correlation Analyses – Concept Hierarchy Generation for Nominal Data.

Unit - III: Data Warehousing and OLAP**(15 Hours)**

Basic Concepts – What Is a Data Warehouse – Differences between Operational Database Systems and Data Warehouses – But, Why Have a Separate Data Warehouse – Data Warehousing: A Multitiered Architecture – Data Warehouse Models: Enterprise Warehouse, Data Mart, and Virtual Warehouse – Extraction, Transformation, and Loading – Metadata Repository – Data Warehouse Modeling: Data Cube and OLAP – Data Cube: A Multidimensional Data Model – Stars, Snowflakes, and Fact Constellations: Schemas for Multidimensional Data Models – Dimensions: The Role of Concept Hierarchies – Measures: Their Categorization and Computation – Typical OLAP Operations – A Starnet Query Model for Querying Multidimensional Databases – Data Warehouse Design and Usage – A Business Analysis Framework for Data Warehouse Design – Data Warehouse Design Process – Data Warehouse Usage for Information Processing – From Online Analytical Processing to

Multidimensional Data Mining – Data Warehouse Implementation – Efficient Data Cube Computation: An Overview – Indexing OLAP Data: Bitmap Index and Join Index – Efficient Processing of OLAP Queries – OLAP Server Architectures: ROLAP versus MOLAP versus HOLAP.

Unit - IV: Frequent Patterns, Associations & Correlations and Classification (16 Hours)

Basic Concepts – Market Basket Analysis: A Motivating Example – Frequent Itemsets, Closed Itemsets, and Association Rules – Frequent Itemset Mining Methods – Apriori Algorithm: Finding Frequent Itemsets by Confined – Candidate Generation – Generating Association Rules from Frequent Itemsets – Improving the Efficiency of Apriori – A Pattern-Growth Approach for Mining Frequent Itemsets – Mining Frequent Itemsets Using Vertical Data Format – Mining Closed and Max Patterns – Which Patterns Are Interesting—Pattern Evaluation Methods – Strong Rules Are Not Necessarily Interesting – From Association Analysis to Correlation Analysis – A Comparison of Pattern Evaluation Measures – Classification: Basic Concepts – Basic Concepts – What Is Classification – General Approach to Classification – Decision Tree Induction – Decision Tree Induction – Attribute Selection Measures – Tree Pruning – Scalability and Decision Tree Induction – Visual Mining for Decision Tree Induction – Rule-Based Classification – Using IF-THEN Rules for Classification – Rule Extraction from a Decision Tree – Rule Induction Using a Sequential Covering Algorithm.

Unit - V: Cluster Analysis (15 Hours)

Cluster Analysis – What Is Cluster Analysis – Requirements for Cluster Analysis – Overview of Basic Clustering Methods – Partitioning Methods – k-Means: A Centroid-Based Technique – k-Medoids: A Representative Object-Based Technique – Hierarchical Methods – Agglomerative versus Divisive Hierarchical Clustering – Distance Measures in Algorithmic Methods – BIRCH: Multiphase Hierarchical Clustering Using Clustering Feature Trees – Chameleon: Multiphase Hierarchical Clustering Using Dynamic Modeling – Probabilistic Hierarchical Clustering – Grid-Based Methods – STING: STatistical INformation Grid – CLIQUE: An Apriori-like Subspace Clustering Method.

Text Book:

Jiawei Han, Micheline Kamber, and Jian Pei – “DATA MINING Concepts and Techniques” – Third Edition – Morgan Kaufman Publishers, New Delhi.

Chapters:

Unit-I: 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, & 2.4.

Unit – II: 3.

Unit-III: 4.1, 4.2, 4.3, 4.4.

Unit-IV: 6, 8.1, 8.2, 8.4.

Unit V: 10.1, 10.2, 10.3, 10.5

Reference Books:

1. Alex Berson and Stephen J. Smith “Data Warehousing, Data Mining, and OLAP” – Tata McGraw Hill Edition.
2. Margaret Dunham – “Data Mining Introductory and Advanced topics” - Prentice Hall 2003.
3. Heikki Mannila and Padhraic Smyth – “Principles of Data Mining” - MIT Press Fall 2000.

Course Code	Course Title	H	C	I	E	T
17U6FME2	ELECTIVE-II.(E) PHP PROGRAMMING	4	4	25	75	100

Objectives:

- To impart the knowledge of PHP programming
- Code programs and develop interface using PHP programming

Total : 60 Hours**Unit –I: Introduction to PHP****(12 Hours)**

Overview of PHP: PHP Origin-PHP History-Benefits in running PHP As A Server Side Script- Drawbacks in running PHP As A Server Side Script. Getting started: Writing PHP-Naming files-comments- The semicolon- Delivering text as output- White spaces- Running the PHP script- Data types-variables-constants.

Unit-II : The Basics of PHP**(12 Hours)**

Operators: Unary operators-Negation operators-Increment/Decrement operators-Cast operators-Binary operators-Numeric operators-Assignment operators-Concatenation operators-Comparison operators-Logical operators-Bitwise operators-Ternary operators-Operator precedence. Arrays: Array Creation-Array Data Retrieval-Associative array-Conditional Statements: The if statement-Executing multiple statements-The else if clause-The switch statement. Iterations: looping-The For loop-The While loop-Controlling an array using a while loop -Do while statement-The for each loop-Infinite loops-Special Loop keywords - Loops within Loops.

Unit-III: Functions**(12 Hours)**

User defined functions: Functions with arguments-Functions with multiple Arguments-Functions Accepting and returning values by reference- Functions Accepting and returning values by value- Accessing global variables within a function-Globalizing functions-Functions in Files-Recursion- Anonymous Functions-Built-in Functions-PHP Server variables-Working with DATE and TIME Functions-Performing mathematical operations-Working with String Functions.

Unit-IV: Exception Handling and Working with files**(12 Hours)**

Configuration directives-Error logging-Exception handling-About files and directories: Parsing directory paths-calculating file, directory and disk sizes-determining access and modification times-Working with files: the concept of resource-recognizing newline characters, end of file character-opening and closing a file-reading from a file-writing a string to a file-moving the file pointer-reading directory contents.

Unit-V: Working with Forms**(12 Hours)**

Introducing HTML Form Tags and Elements-The main <form> Tag - Form elements:Text Box-Text Area-Password-Radio Button-Check Box-The Combo Box or Drop Down List Box-Hidden Field-Image-Submit and Reset buttons. Adding Elements To A Form: Adding A Textbox- Adding Radio buttons- Adding Check boxes- Adding A select box- Adding A password field- Adding A Textarea- Adding A Submit and Reset button-Adding a Hidden Field-Uploading Files to the web server using PHP-The move_uploaded_file() function.

Text Books:

- 1.Ivan Bayross,Sharnam Shah, “PHP 5.1 for beginners”,First edition,SPD publishers.
2. W.Jason Gilmore,”Beginning Php and Mysql,Fourth edition,Springer publishers.

Chapters:

Unit –I: 1,5

Unit –II: 6

Unit –III: 7

Unit –V: 8

Unit –IV: 8, 10(pages 229-248) → Text Book -2

Reference Books:

1. Kevin Yank,”Build your own database driven web site using PHP & MySQL”,2011,4th edition,sitepoint.
2. Dinesh Maidasani, “Straight to the point PHP”,First edition,FireWall media.
3. Matt Zandstra,” SAMS Teach yourself PHP4 in 24 hours”

Course Code	Course Title	H	C	I	E	T
17U6FME2	ELECTIVE-II.(F) MOBILE COMPUTING	4	4	25	75	100

Objectives:

- Learn the basics of mobile telecommunication system
- Be exposed to Ad-Hoc networks.
- Gain Knowledge about different mobile platforms and application development.

**Total: 60 Hours
(12 Hours)**
UNIT I : INTRODUCTION

Introduction-Mobile Computing Vs Wireless Networking-Mobile Computing Applications-Characteristics of Mobile Computing-Structure of Mobile Computing Application. MAC Protocols – Wireless MAC Protocol Issues - Fixed Assignment Schemes. – Random Assignment Schemes – Reservation Based Schemes.

UNIT II : MOBILE INTERNET PROTOCOL AND TRANSPORT LAYER (12 Hours)

Overview of Mobile IP – Features of Mobile IP – Key Mechanism in Mobile IP – Route Optimization. Overview of TCP/IP – Architecture of TCP/IP – Adaptation of TCP Window – Improvement in TCP Performance.

UNIT III : MOBILE TELECOMMUNICATION SYSTEM (12 Hours)

Cellular Mobile Communication – Global System for Mobile Communication (GSM) – General Packet Radio Service(GPRS) – Universal Mobile Telecommunication System(UMTS).

UNIT IV: MOBILE AD-HOC NETWORKS (12 Hours)

Ad-Hoc Basic Concept – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols – Popular Routing Protocols – Vehicular Ad Hoc networks (VANET) – MANET Vs VANET – Security issues in a MANET.

UNIT V: MOBILE PLATFORMS AND APPLICATIONS (12 Hours)

Operating System responsibilities in Mobile Device– Special Constrains & Requirements of Mobile O/S– Commercial Mobile Operating Systems – Software Development Kit : iOS, Android, Blackberry, Windows Mobile – M-Commerce – Structure – Pros & Cons – Mobile Payment System – Security Issues.

Text Book:

1. Prasant Kumar Pattnaik, Rajib Mall, “Fundamentals of Mobile Computing”, 2012 by PHI Learning Pvt.Ltd, New Delhi.

Chapters:

Unit I: 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.4, 3.5, 3.6

Unit II: 4.1, 4.4, 4.5, 4.6, 5.1, 5.2, 5.7, 5.8

Unit III: 2.6, 2.7, 2.8, 2.9,

Unit IV: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.9, 7.10, 7.11

Unit V: 9.1, 9.3, 9.4, 11.1, 11.3, 11.4, 11.5, 11.6

Reference Books:

1. Jochen H.Schiller, “Mobile Communications”, 3rd Edition, Pearson Education, New Delhi.
2. Dharma PrakashAgarval, Qing and an Zeng, “Introduction to Wireless and Mobile Systems”, 4th Edition, Thomson Asia Pvt. Ltd.
3. Norman Sadeh, “M-Commerce Technologies, Services and Business Models”, 2002 by Wiley Publications.

Course Code	Course Title	H	C	I	E	T
17U6FME2	ELECTIVE-II. (G) WAP AND XML	4	4	25	75	100

Objectives

- To impart the knowledge of communication protocols especially for wireless devices.
- Introduction of skills related to XML which includes Document Type Definition (DTDs), well formed and Valid XML documents and XML schemas.

.Total : 60 Hrs**(12 Hours)****Unit I**

Overview of WAP: WAP and the wireless world –WAP Application architecture – WAP internal structure – WAP versus the Web – WAP 1.2 – WTA and Push features.

Unit II**(12 Hours)**

WAP Gateways: Definition – Functionality of a WAP gateway – The web modal versus the WAP model – Positioning of a WAP gateway in the network – selecting a WAP gateway.

Basic WML: Extensible Mark-up Language – WML structure – A basic WML card – Text Formatting –navigation – Advanced display features.

Unit III**(12 Hours)**

XML: Introduction XML: XML history and origin- XML syntax - Components of XML - CDATA & PCDATA - State of XML - Modelling Data - XML declaration - XML First program – XML namespace.

Unit IV**(12 Hours)**

Document Type Definition (DTD): Fundamentals - Internal & External DTDs – Valid and well formed documents – Elements of DTDs – Types of elements: empty, element-only, mixed elements-Attributes of DTDs-Types of attributes: String, enumerated, Tokenized-creating a valid document from a DTD.

Unit V**(12 Hours)**

XML Schema: XML Schema and W3C Schema- Benefits of Schema- XML Schema vocabulary-schema elements – Data type Elements –Element type Elements – Group Element – Attributes type Elements – Description Element – XML Data type –conversion of DTDs to Schema.

Text Books:

- 1) For Unit I , II
Charles Arehart and Others, “Professional WAP with WML , WML scripts , ASP, JSP,XML ,XSLT, WTA Push and Voice XML” Shroff Publishers and Distributers Pvt. Ltd. 2000.
- 2) For Unit III, IV and V
“XML Unleashed “by Michael Morrision , Techmedia publication, 2000.

Reference Books:

- 1) “XML TM Bible “,Eliotte Rusty Harlod ,Books India (P) Ltd, 2000.
- 2) “Beginning XML”, By Joe Fawcett, Liam R.E. Quin, DannyAyers , John wiley & Sons, Inc., Fifth Edition.
- 3) “WAP – The Wireless Application Protocol” by Sandeep Singhal, Lalitha suryanarayana, Pearson Education India 2002.

Course Code	Course Title	H	C	I	E	T
17U6FME2	ELECTIVE-II. (H) MANAGEMENT INFORMATION SYSTEMS	4	4	25	75	100

Objectives:

- To impart the knowledge of Management Information systems.
- Learning the concept and operations of information systems.

**Total:60 Hours
(12 hours)**

Unit - I:

Meaning-Definition-Integrated systems-MIS and data processing-MIS and other academic discipline such as managerial accounting, operational research, management, organization theory and computer science.

Unit - II:

(12 hours)

MIS support for decision making-structured, programmable decisions-Unstructured, non programmable decisions-hierarchy of management activity-Information systems for operational and management control –Planned performance-Variance from planned performance, reasons for variances, Analysis of possible decisions or courses of action-MIS structure based on organizational function-Formal and informal systems.

Unit - III:

(12 hours)

Decision-making process-phases of decision making process, problem finding, formulation and solution or alternatives-criteria for decision making-Decision trees.

Unit - IV:

(12 hours)

Concepts of information-Definition of information-Model of communication system-Mathematical definition of information-Information presentation-Quality of information-General model of the human as an information processor.

Unit - V:

(12 hours)

Concepts of planning and control and organization structure-Meaning-Object of organizational planning-Setting of goals and objectives-Hierarchy of planning-The planning process-The sources of planning data-Development of planning models-The basic model of an organization structure-Organization by product or service-Matrix organization .

Text Book:

Magrethe.H.Olson&Gordon.B.Davis-“ManagementInformationsystems”conceptual Foundations, structure and development-II edition, MGH.

Chapters:

Unit – I: 1.1, 1.2, 1.3.

Unit – II: 2.1, 2.2, 2.3, 2.6.

Unit – III: 6.1, 6.2, 6.3, 6.7

Unit – IV: 7.1, 7.2, 7.3, 7.4, 8.1.

Unit – V: 10.1, 10.2, 11.1.11.2.

Reference Books:

1. James A O’Brien George M Marakas Ramesh Behl “Management Information Systems” Tenth edition McGrawHill publications.
2. Rainer Prince Watson “Management Information Systems”-Third edition Wiley publications.
3. C.Laudon,JanePrice Laudon-“Management Information System”- seventh edition -PHI.

Objectives:

Course Code	Course Title	H	C	I	E	T
17U6FSM6	SBE - ANIMATION TECHNIQUES USING FLASH	2	2	25	75	100

- To impart the knowledge of Basic Animations.
- Learning the concept of 2D Animations and its operations.

Total : 30Hrs**UNIT I: Introducing Flash CS5****(5 Hours)**

Introduction to Flash CS5: Exploring the New and Enhanced features of Flash CS5 – Launching the Flash Application – Exploring the User Interface of Flash CS5 – Working with workspaces – Saving – Opening – Closing Flash Document.

UNIT II: Getting Started with Tools**(5 Hours)**

Working with Drawing Tools in Flash – Working with the Selection and Modification Tools in Flash – Working with Colors in Flash – Adding Filters in Flash.

UNIT III: Working with Objects and Text**(6 Hours)**

Editing Objects in Flash – Transforming Objects – Copying – Deleting – Working with Classic and Text Layout Framework text Engines – Editing a Text Field.

UNIT IV: Working with the TIMELINE Panel**(7 Hours)**

Working with Frames and Keyframes in Flash – Working with Layers and Layer Folders in Flash – Creating Symbols in Flash – Modifying Symbols.

UNIT V: Creating Animations**(7 Hours)**

Working with Sound files in Flash – Understanding Tweened Animations – Using Shape Tweening in Flash – Working with Motion Tweening in Flash – Editing the Motion Path of a Tweened Object – Working with Motion Presets in Flash.

Text Book:

1. Flash CS5 in Simple Steps – Kogent Learning Solutions Inc. 2011 Dream Tech Press.

Chapters:**Unit I: 1****Unit I: 2****Unit III: 3****Unit IV: 4, 5****Unit V: 6, 7****Reference Books:**

1. Learning Flash CS5 by Ramesh Bangia, Khanna Publishing.
2. Adobe Flash Professional CS5 Bible by Todd Perkins, Wiley Publications.