

PROGRAMME

BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)

CURRICULUM AND SYLLABI

(For students admitted from the academic year 2015-16)

SRM UNIVERSITY
SIKKIM

B.Sc (IT) Curriculum

Course Category	Course Code	Course Name	L	T	P	L+T+P	C	
SEMESTER-I								
Language	LAE1511	English – I	3	1	0	4	3	
Core	BIT1512	Programming in C	3	1	2	6	4	
	BIT1513	Digital Logic Fundamentals	4	1	0	5	4	
Supportive	BIT1514	Basic Statistics	4	1	0	5	4	
General	GEN1515	Environmental Studies [Internal Evaluation]	2	0	2	4	4	
Skill	SPD1516	Computer Skills [Practical course]	1	0	2	3	3	
SUB TOTAL								22
SEMESTER-II								
Language	LAE1521	English – II	3	1	0	4	3	
Core	BIT1522	Programming in C++	3	1	2	6	4	
	BIT1523	Data Structures and Algorithms	4	1	0	5	4	
Supportive	BIT1524	Mathematics for Computer	4	1	0	5	4	
Core	BIT1525	Scripting Languages Lab [Pure Practical]	2	2	2	6	4	
General	GEN1526	Human Rights and Professional Ethics [Internal Evaluation]	2	0	1	3	3	
Extension	EX*1527	NSS / NCC /Yoga [Internal Evaluation]	0	0	2	2	2	
SUB TOTAL								24
SEMESTER-III								
Core	BIT1531	Core Java Programming	3	0	3	6	4	
	BIT1532	Database Management Systems	3	0	3	6	4	
	BIT1533	Operating Systems and Unix	4	1	0	5	4	
Elective	BIT1534 / BIT1535	Management Information System / E-Commerce and M-Commerce	4	1	0	5	4	
General	GEN1536	Value Education [Internal Evaluation]	1	0	2	3	3	
Supportive	BIT1537	Information Literacy [Internal Evaluation]	0	1	3	4	3	
Skill	SPD1538	Soft Skill & Verbal Aptitude[Internal Evaluation]	0	0	2	2	2	
SUB TOTAL								24
SEMESTER-IV								
Core	BIT1541	Advanced Java Programming	3	0	3	6	4	
	BIT1542	Computer Networks	4	1	0	5	4	
	BIT1543	Software Engineering	4	1	0	5	4	
Elective	BIT1544 /BIT1545	Information Security / Mobile Computing	4	1	0	5	4	
Core	BIT1546	Case Study: Unix and Network Programming [Practical course]	0	2	3	5	3	
Supportive	BIT1547	Technical Writing [Internal Evaluation]	0	1	3	4	3	
Skill	SPD1548	Quantitative Aptitude and Reasoning -I [Internal Evaluation]	0	0	2	2	2	
SUB TOTAL								24
SEMESTER-V								
Core	BIT1551	Cloud Computing	3	0	3	6	4	
	BIT1552	Enterprise Resource Planning	4	1	0	5	4	
	BIT1553	Data Mining and Warehousing	4	1	0	5	4	

Elective	BIT1554 / BIT1555	Cyber Crime and Laws / XML and Web Services	4	1	0	5	4
Core	BIT1556	PHP and MYSQL Programming [Practical course]	0	2	3	5	3
Supportive	SPD1557	Entrepreneurial Development [Internal Evaluation]	0	0	3	3	3
Skill	SPD1558	Quantitative Aptitude and Reasoning-II [Internal Evaluation]	0	0	2	2	2
		SUB TOTAL					24
		SEMESTER-VI	L	T	P	L+T+P	C
Core	BIT1561	Big Data and its Applications	4	1	0	5	4
	BIT1562	Software Testing	3	1	2	6	4
	BIT1563	Information and Storage Management	4	1	0	5	4
Elective	BIT1564 / BIT1565	VB .NET / C# Programming	3	0	2	5	4
Skill	SPD1566	Leadership and Team Management [Internal Evaluation]	0	0	2	2	2
Core	BIT1567	Project Work	0	2	6	8	4
		SUB TOTAL					22

Total Credits: 140

- Total Number of Hours per week includes L+T+P and Counseling / Library / Digital Reference / Guest Lecture / Co-Curricular Activities

SEMESTER-I

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
LAE1511	English	3	1	0	4	3

INSTRUCTIONAL OBJECTIVES

1. To enable students improve their lexical, grammatical and communicative competence.
2. To enhance their communicative skills in real life situations.
3. To assist students understand the role of thinking in all forms of communication.
4. To equip students with oral and appropriate written communication skills.
5. To assist students with employability and job search skills.
6. To improve the LSRW skills in the students
7. To enable the students to understand the Grammar and usage of the language.
8. To make the students culturally fit in the communicative environment.

UNIT- I LISTENING AND SPEAKING SKILLS

Common Errors in pronunciation-Describing the process (respective fields)-Conducting Meetings-Group Discussion-JAM (Just A Minute).

UNIT- II READING SKILL

Reading the newspaper and highlighting the news-Reading Comprehension-Summarizing and note making-Predicting the content.

UNIT- III WRITING SKILL

Interpretation of Data (flow charts, figures and pictures)-Writing notice, agenda, minutes of meeting-Writing letters: business letter and informal letter-Writing a Resume and Covering letter-Essay Writing.

UNIT- IV GRAMMAR

Tense and Concord-Preposition-Direct and Indirect Speech-Spotting and correcting the errors-Arranging the sentence in sequential order.

UNIT- V ENGLISH FOR RESEARCH

Project proposal-Report Writing-Types of data -Methods of collecting Data -Presentation Techniques.

REFERENCE BOOKS:

1. Department of English and Foreign Languages. "English for Engineers", SRM University Publications, 2013.
2. Dhanavel, S.P. "English and Communication Skills for Students of Science and Engineering", Orient Blackswan Ltd., 2009.
3. Green, David. "Contemporary English Grammar Structures and Composition." Macmillian Publishers India Ltd, Delhi,
4. Taylor, Shirley, V.Chandra. "Communication for Business. 4th Ed. Dorling Kindersly India pvt. Ltd., 2011.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1512	Programming in C	3	1	2	6	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To acquire basic knowledge about Programming in C
2. To gather extensive knowledge in C programming and developing programming skills
3. To learn about pointers concepts and functions using procedures

UNIT-I BASIC STRUCTURE

Evaluation and applications of C – Structure of a C program – Data types – Declarations – Operators – Expressions – Type conversions –Built-in- Functions.

UNIT – II CONDITIONAL STATEMENTS

Data Input and Output – control statements IF, ELSE-IF, GOTO, SWITCH, WHILE-DO, DOWHILE, FOR, BREAK and CONTINUE

UNIT – III FUNCTIONS AND ARRAYS

Defining and Accessing functions – passing parameters of functions – Arguments – recursive functions – Arrays: Defining and processing Arrays – Multidimensional Arrays – passing arrays to functions – Arrays and strings – string functions – string manipulations.

UNIT- IV POINTERS

Pointer declarations – operations on pointers – pointers to functions – pointers and strings – pointers and arrays – array of pointers – structures – structures and pointers – unions.

UNIT- V FILE MANAGEMENT

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

REFERENCE BOOKS:

1. E.Balagurusamy “ (2012), Programming in C” Tata McGraw Hill Publication, 6th version
2. Gottfried B.S.(1997), Theory and problems of Programming with C – Schaum's Outline Series – Tata McGraw Hill
3. Kanetkar Y – 1995, Let us C – BPB Publications
4. Deitel H.M. & Deitel .P.J., 2001. How to Program C – Prentice Hall India .

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1513	Digital Logic Fundamentals	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To acquire basic knowledge about Number Systems
2. To gather extensive knowledge in Computer Memory
3. To learn about Microprocessors and Assembly Language Programming

UNIT I INTRODUCTION TO DIGITAL DESIGN

Data Representation – Data Types – Complements (signed and unsigned numbers) – Types of Binary Codes – Signed and unsigned numbers - Binary Addition, Subtraction Multiplication, Division, - Logic Gates - Boolean algebra - Map Simplification (up to 4 variable maps): SOP, POS, Don't Care conditions.

UNIT II DIGITAL COMPONENTS - REGISTER TRANSFER & MICRO OPERATIONS Combination Circuits: Half-Adder, Full Adder- Flip Flops – Sequential Circuits - ICs : Decoders , Encoders, Multiplexers, Registers, Shift Registers, Binary Counters – Sequential circuits - Memory Hierarchy – Types of Memory Unit.

UNIT III I/O AND MEMORY ORGANIZATION

Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer: Handshaking – Serial Transfer – Communication Interface – Modes of Transfer – Priority Interrupt – DMA – Serial Communication- Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware.

UNIT IV MICROPROCESSOR

Introduction to micro computers, microprocessors and Assembly languages - Microprocessor architecture and its operations - 8085 MPU - 8085 instruction set and classifications.

UNIT V ASSEMBLY PROGRAMMING

Writing assembly level programs - Programming techniques such as looping, counting and indexing addressing modes - Data transfer instructions - Arithmetic and logic operations - Dynamic debugging. Stack – subroutine - conditional call and return instructions.

REFERENCE BOOKS:

1. Morris Mano, “Computer System Architecture”, Prentice Hall of India, 3rd Edition, 2008.
2. R. S. Gaonkar, “Microprocessor Architecture. Programming and Applications with 8085/8080A”, Wiley Eastern limited. 1990.
3. Hamacher V C , “Computer Organization”, Tata McGraw Hill, 1996

4. Mathur, "Introduction to Microprocessor", Third Edition, Tata McGraw-Hill Publishing Co.Ltd. 1993.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1514	Basic Statistics	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To provide a strong foundations in the principles of statistics.
2. To apply Statistical techniques for solving real life problems

UNIT-I Nature and scope of statistical methods and their limitations - Classification, tabulation - Diagrammatic representation of various types of statistical data - Frequency curves and O gives - Lorenz curve.

UNIT-II Measures of Central tendency – Arithmetic mean, Median, Mode, and their properties – Merits and demerits

UNIT-III Measures of Dispersion – Range, Mean Deviation, Quartile Deviation, Standard Deviation, Coefficient of Variation and their properties – merits and demerits

UNIT-IV Concept of Bivariate distribution -Correlation - Definition-Uses –Types – Karl Pearson's Correlation Co-efficient –Scatter diagram -Spearman's Rank Correlation Co-efficient - Regression equations –Regression Coefficient –Properties-Simple Problems

UNIT-V Random experiment – Definition of various events – Mathematical and Axiomatic definition of probability – Addition and Multiplication theorem – Simple problems

REFERENCES

1. Pillai, R.S.N, Bagavathi, V. "Statistics, Theory and Practice, 7th Edition", S.Chand Ltd, New Delhi 2009.
2. Ken Black, "Business Statistics for Contemporary Decision Making, 7th Edition", John Wiley Publications 2013.
3. Gupta, S.P. (2011), "Applied Statistical Methods, 4th Edition", Sultan Chand & Sons, New Delhi.
4. Nabendu Pal, "Statistics: Concepts and Applications", Prentice, India, Hall of India Pvt. Ltd.
5. Padmalochan Hazarika, "Business Statistics", New Delhi, S Chand.
6. Pillai R S N, Bagavathi V, "Practical Statistics", New Delhi, S Chand.
7. Manoj K Bhowal, Pronob Barua, "Statistics" (Vol, I & II), Delhi, Asian Books Pvt. Ltd.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
GEN1515	Environmental Studies	2	0	2	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain knowledge on the importance of environmental education and ecosystem
2. To acquire knowledge about environmental pollution- sources, effects and control measures of environmental pollution
3. To understand the various energy sources, exploitation and need of alternate energy resources. Disaster management
4. To acquire knowledge with respect to biodiversity, its threats and its conservation and appreciate the concept of interdependence
5. To be aware of the national and international concern for environment for protecting the environment

UNIT-I-ENVIRONMENTAL EDUCATION

Definition and objective. Structure and function of an ecosystem – ecological succession –primary and secondary succession - ecological pyramids – pyramid of number, pyramid of energy and pyramid of biomass.

UNIT-II-POLLUTION

Air, water, soil –causes and effects and control measures. Specifically: acid rain, ozone layer depletion, green house gas effect and global warming. Waste management : prevention and control measures of solid waste.

UNIT-III NATIONAL CONCERN FOR ENVIRONMENT

Important environmental protection Acts in India – water, air (prevention and control of pollution) act, wild life conservation and forest act .Functions of central and state pollution control boards. Issues involved in enforcement of environmental legislation.

UNIT-IV BIODIVERSITY

Genetic, species and ecosystem diversity – bio diversity hot spots - values of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - threats to biodiversity: habitat loss, poaching of wildlife – endangered and endemic species of India, Conservation of biodiversity: in-situ and ex-situ conservations.

UNIT-V ENERGY RESOURCES AND THEIR EXPLOITATION

Conventional energy sources: -coal, oil, biomass and nature gas - over- utilization.. Non-conventional energy sources: hydroelectric power, tidal, wind, geothermal energy, solar collectors, photovoltaic, nuclear-fission and fusion. Energy use pattern and future need projection in different parts of the world, energy conservation policies.

Natural and Man made disasters -types, causes, onset, impacts. (viz. earthquake,flood, drought, cyclone, tsunamic, volcanics, landslide, industrial accidents.). Forecasting and managements

REFERENCE BOOKS:

1. Jeyalakshmi.R, “Principles of Environmental Science”, 1st Edition, Devi Publications, Chennai, 2006.
2. De.A.K., “Environmental Chemistry”, New Age International, New Delhi, 1996.
3. Sharma.B.K. and Kaur, “Environmental Chemistry”, Goel Publishing House, Meerut, 1994.
4. Dara S.S., “A Text Book of Environmental Chemistry and pollution control”, S.Chand& Company Ltd., New Delhi, 2004.
5. Dr.RahavanNambiar, “Textbook of Environmental studies. SciTech Publication (India) Pvt.Ltd.Secondeditio

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
SPD1516	Computer Skills	1	0	2	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain knowledge on the basic computer system
2. To understand the MS-WORD.
3. To acquire knowledge with respect to MS-EXCEL
4. To learn the basics of MS-POWERPOINT and ACCESS.

UNIT-I INTRODUCTION TO COMPUTER SYSTEMS

Applications of Computers in Business – Types of Computers and Electronic devices – An overview of operation system – Single user systems – Multi user Systems – Assembler – Translator – Compiler – Different Computer Language.

UNIT-II THE WORD PROCESSOR

Creating a Document -Opening a Document -Laying Out the Page-Setting paper size, margins, and orientation -Creating headers and footers -Numbering pages -Entering and Editing Text-Modifying text-Moving and copying text -Finding and replacing text -Correcting mistakes automatically-Printing -Adding character to your characters -Planning Your Paragraphs-Aligning paragraphs -Spacing your lines -Making Lists -Bulleting lists-Numbering lists-Using a style -Creating a style - tables and columns

UNIT-III THE SPREADSHEET

Creating a Spreadsheet -Inputting Your Data -Entering your data -Editing your data -Filling cells automatically -Managing Columns and Rows-Copying, pasting, cutting, dragging, and dropping your cells -Adding the Art -Formula Basics-Adding, Subtracting, and More -Adding and other arithmetic -Adding with the Sum function -Rocketing into Orbit with Functions Using the AutoPilot: Functions dialog box -Editing functions -Entering functions manually -Copying and pasting formulas - Creating formula arrays -Recalculating formulas -Creating Magic Formula-Nesting functions -Creating conditional formulas

UNIT-IV THE POWER POINT PRESENTATION

Creating a Presentation -Opening an existing presentation -Adding Slides -Adding text to a slide -Saving Your Presentation for Posterity - Making Presentations Picture Perfect -Adding Images -Clipping art -Drawing objects -Coloring Backgrounds - Creating a plain-colored background -Creating a gradient background -Hatching a background -Using a bitmap image as a background -Creating 3-D text-Inserting 3-D objects -Animating Impressively -Using Text Effects Effectively -Creating Animation Effects -Creating Animated GIF files -Adding Slide Transition Effects - Showing a Presentation -Setting slide timing -Hiding slides -Specifying slide show settings -Delivering a Slide Show .

UNIT-V MS-ACCESS

Database development-Creating Access tables-Setting the primary key-Manipulating tables-Entering data with access forms-Selecting data with queries-Creating a multiple queries-Presenting data with access reports.

Operating system and fundamentals

Computer Networks and Internet

REFERENCE BOOKS:

1. Sinha P.K. & Sinha Priti, Computer Fundamentals, BPB Publications, 2007
2. Vishnu P. Singh, "*Ms Office 2007*", BPB Publications, 2007.
3. AnanthiSheshasaayee, Sheshasaayee G., "*Computer Applications in Business & Management*", Margham publishers, 2004.
4. Lisa A.Bucki, John Walkenbach, FaitheWempen Michael Alexander and Dick Kusleika, "*Mirosoft office 2013 Bible*", Wiley India Pvt. Ltd., 2013

SEMESTER – II

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
LAE1521	English – II	3	1	0	4	3

INSTRUCTIONAL OBJECTIVES:

1. To cater to the essential aspects of communication skills thereby creating a congenial class room atmosphere, leaving enough scope for confident interactions and free flow of individual thoughts.
2. To enable the students understand the various modes of communication.
3. To make students aware about the etiquettes of communication.
4. To enhance communicative competence among the students.
5. To help the students to survive in culturally different environment by using apt communicative skills.
6. To assist students understand the role of thinking in all forms of communication.

UNIT-I UNDERSTANDING COMMUNICATION

Communication: Its importance- Cross-Cultural Communication-Effective Listening-Corporate Communication-Business Communication Aids- Building Communicative Competence.

UNIT-II VERBAL AND NON VERBAL COMMUNICATION

Face to face Communication- Communicating with the group- Communicating during business meetings- Job interview Team Presentation- Body Language and eye contact- Dress Code- Personal Grooming.

UNIT-III USE OF LANGUAGE

Formal usage of language- Usage of jargons- Correct choice of words- Tones, intonations, stress.

UNIT-IV ELECTRONIC COMMUNICATION

Use of internet- Writing e-mails and e-mail etiquette- Communicating over the telephone and Telephone Etiquette-Fax- The Impact of e-mails on business.

UNIT-V SURVIVING IN THE WORK PLACE THROUGH COMMUNICATION

Balancing work life through communication-The impact of different people on work life balance-Life demands-Strategies of balance.

REFERENCE BOOKS:

1. Quintanilla, Kelly M., Shawn T. Wahl. "Business and Professional Communication." SAGE Publication India Pvt Ltd, Delhi, 2011.
2. Raman, Meenakshi, Prakash Singh. "Business Communication." 2nd Ed. Oxford University Press, Delhi, 2012.
3. Taylor, Shirley, V.Chandra. "Communication for Business. 4th Ed. Dorling Kindersly India pvt. Ltd., 2011.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1522	Programming in C++	3	1	2	6	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To learn the concepts of class & objects.
2. To perform Inheritance, Overloading of operators, functions, constructors and File Handling.
3. To do effective file management.

UNIT-I INTRODUCTION TO OOPS

Principles of Object Oriented Programming (OOP) : Evolution of C++ -Programming Paradigms - Key Concepts of OOP - Advantages of OOP - Usage of OOP and C++ .Input and Output in C++-Streams-Stream classes Unformatted console I/O operations-Member functions of iostream class-manipulators-manipulators with parameters

UNIT-II INTRODUCTION TO C++

Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Expressions and Control Structures: If,If..Else, Switch - Repetitive Statements- for, while, do..while - Pointers and arrays

UNIT-III FUNCTIONS, CLASSES AND OBJECTS

Functions in C++ - Main Function - Function Prototyping - Parameters Passing in Functions - Values Return by Functions - inline Functions - Function Overloading Classes and Objects; Constructors and Destructors; and Operator Overloading - Type of Constructors

UNIT-IV INHERITANCE AND POLYMORPHISM

Inheritance: Single Inheritance - Multilevel inheritance - Multiple inheritances - Hierarchical Inheritance - Hybrid Inheritance. Pointers - Virtual Functions and Polymorphism

UNIT-V FILES

Working with Files: Classes for File Stream Operations - Opening and Closing a File - End-of-File Detection - File Pointers - Updating a File - Error Handling during File Operations - Command-line Arguments

REFERENCE BOOKS:

1. Ashok N.Kamthane,(2006), "Object Oriented Programming with ANSI & Turbo C ++", First edition ,Pearson Education.
2. E. Balagurusamy, (2008), "Object Oriented Programming with C++", Tata McGraw-Hill Publication.
3. Herbert Schildt, (2003), "C++: The Complete Reference", Tata McGraw publication.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1523	Data Structures and Algorithms	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gather extensive knowledge in Data Structures.
2. To strengthen the knowledge on structures, arrays etc., of Data Structures.
3. To study the Basics of algorithms through time and space complexity, Searching and Sorting Techniques and "Divide and Conquer" Methods.

UNIT-I INTRODUCTION TO THEORY OF DATA STRUCTURES

Complexity – Asymptotic Notation – Algorithm Analysis - Recursion – Introduction to Linear data structures – Array Operations – pointers and Arrays – Introduction to Lists and Linked Lists

UNIT-II STACK AND QUEUES

Introduction to stacks – Representation of Stacks through Array and Lists – Applications of Stacks – Introduction to Queues – Representation of Queues – Circular Queues – Double Ended Queues – priority Queues – Applications of Queues

UNIT-III TREES

Introduction - Non Linear data Structures – Binary Trees – Types of Trees – Properties of Binary Trees – Representation of Binary Trees – Binary Tree Traversal – Applications of Binary Tree – AVL Trees – Representation – Operations – Expression Trees

UNIT-IV SEARCHING AND SORTING

Introduction – Efficiency of Sorting Algorithm – Bubble Sort – Selection Sort – Quick Sort – Insertion Sort – Merge Sort – Binary Tree Sort – Radix sort – Shell sort – Heap sort – Searching: Binary Search – Indexed Sequential Search

UNIT-V GRAPHS

Introduction – Terms Associated with graphs – sequential representation of Graphs – Linked Representation – Traversal of Graphs – Spanning Trees – Shortest path – Applications of Graphs

REFERENCE BOOKS:

1. Instructional Software Research and Development (ISRD) Group, *"Data Structures Using C"*, First edition, TMH Education Private Limited 2006.
2. Weiss Mark Allen, *"Data Structure and algorithm analysis"*, Pearson Education 2006.
3. Ellis Horowitz, Sahni, Dinesh Mehta, *"Fundamentals of Data Structures in C++"*, Golgotha publication, New Delhi 1999.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1524	Mathematics for Computer	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To develop a strong foundations in Set Theory, Logical thinking, and Propositional Calculus
2. To solve problems in Vectors, Matrices, Integers, and Counting principles

UNIT-I Mathematical Logic I

Statements- Logical connectives: Conjunction, Disjunction, Negation, Conditional, Bi-conditional operators. Tautology, contradiction, logical equivalence, tautological implications, Propositions.

UNIT-II Mathematical Logic II

Conjunctive Normal Form, Disjunctive Normal Form, Principle disjunctive normal form, Principle conjunctive normal form, Arguments, validity of arguments.

UNIT-III Basic set theory

Definition of set, Representation of sets, Types of sets, Operation on sets, Venn diagram. Relations, Types of relation, Equivalence relation, Partial order relation, Function definition. Types of functions, Composite of two functions.

UNIT-IV Matrix theory I

Matrices, Types of matrices, Addition, Subtraction, Multiplication of matrices, Inverse of matrix. Solution of linear algebraic equations: Matrix method, Cramer's rule

UNIT-V Matrices theory II

Symmetric, Skew symmetric, Hermitian, Skew Hermitian, Orthogonal, Unitary matrices – Cayley Hamilton Theorem (Without Proof)– Eigen values– Eigen vectors.

REFERENCE BOOKS:

1. Vittal.P.R, Mathematical Foundation, Reprint ,Margham Publications, Chennai 2011.
2. Veerarajan .T, Discrete Mathematics, 7thEdition, Tata-Macgrawhill, New Delhi. 2006.
3. Vittal, P.R., Allied Mathematics,4th Edition Reprint, Margham Publications, Chennai 2013.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1525	Scripting Languages Lab	2	2	2	6	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To classify the various Scripting Languages
2. To understand DOM and XML
3. To create a webpage

UNIT-I Introduction to Internet and World Wide Web: Introduction to networks, LAN,MAN and WAN, History of the Internet, Email concepts, Sending and Receiving files by E-mail, Intranet, Web system Architecture, Exploring HTTP, URL, Domain Name System, Web Browsers, Web Pages

UNIT-II Hyper text Markup Language and Web Design: Basics of HTML, HTML Document display, Formatting Text, Link, Lists, Images, Tables, Forms, Frames, Website Design consideration, Case study: Designing Layout of a web page for any Domain

UNIT-III Usage of Cascading Style Sheet: Syntax of CSS, Style sheets types, Properties and Text attributes Padding, List properties, List Properties, Positioning, Margins, Colors, Properties and Table attributes

UNIT-IV Fundamentals of Java Script: DHTML, HTML and JavaScript, JavaScript Elements, Variables, Operators, Flow Control Statements, Arrays, Functions, Event Handling, Browsers and JavaScript, Web Pages and JavaScript, Frames and JavaScript, Validation of User Form

UNIT-V Server-Side Programming: Client-Side Scripting and Server-Side Scripting, Servlets – Definition, Advantages, Life Cycle of a Servlets, Creating a Servlet and Configuring, Java Sever Page – Life Cycle and Structure of JSP, Active Server Pages – Creating an ASP, IIS installation for ASP, Built-in Objects, Exploring Forms, Comparison of ASP over JSP.

REFERENCE BOOKS:

1. Ivan Bayross, *"Web enabled commercial application development using HTML, DHTML java script, perl CGI"*, 3rd Edition, BPB Publications, New Delhi 2005.
2. H M Deitel, T.R. Nieto, *"Internet and world wide web How to program"*, Fifth Edition, Prentice Hall of Indian Pvt. Ltd, New Delhi 2011.
3. Deitel, Nieto,lin, sadhu, *"XML How to program"*, Pearson Education 2005.
4. Deven N. Shah (2012), *A Complete Guide to Internet and Web Programming*, DreamTech Press, New Delhi
5. Raj Kamal (2002), *Internet and Web Technologies*, TataMcGraw Hill, New Delhi.
6. Margaret Levine Young (2002), *Internet The Complete Reference*, TataMcGraw Hill, Second Edition, New Delhi.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
GEN1526	Human Rights And Professional Ethics	2	0	1	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain knowledge on ethical practices around the world.
2. To understand and imbibe ethical values which are important in furthering one's professional life in workplaces

UNIT I : HUMAN VALUES

Types- morals- ethics- integrity- work ethics- service learning- virtues- respect for others- honesty- courage- commitment- empathy- challenges in the workplaces- character- spirituality- corporate excellence.

UNIT II : VARIETY OF MORAL ISSUES

Types of inquiry- Moral dilemmas- Moral autonomy- Kohlberg's theory- Gilligan's theory- consensus and controversy- Models of professional roles- Theories about right action.

UNIT III : SELF INTEREST

Customs and religion- Use of ethical theories- Valuing time- Cooperation codes of ethics- Outlook on law- The challenger case study.

UNIT IV :

Safety and risk- Assessment- Responsibility and rights- Risk benefit analysis- Reducing risk- The three mile island and Chernobyl case studies.

UNIT V : GLOBAL ISSUES

Multinational corporations- Environmental ethics- Computer ethics- Weapons development and ethics- Moral leadership

REFERENCE BOOKS:

1. Naagarajan R S *"A Textbook on Professional Ethics and Human Values, New Age International"*, New Delhi 2006.
2. Mike Martin. *Ethics in Engineering*, McGraw Hill, New York 1996.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
EX*1527	NSS / NCC / YOGA	0	0	2	2	2

To imbibe in the minds of students the concepts and benefits of NSS /NCC/Yoga and make them practice the same
SEMESTER III

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1531	Core Java Programming	3	0	3	6	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To understand the principles and concepts of object oriented programming
2. To learn multithreading concepts
3. To Store and retrieve the information from Files.
4. To Implements various application like banking, inventory, etc.

UNIT I - INTRODUCTION TO JAVA

The Genesis of Java- Buzzwords- Object oriented Concept- Lexica Issues- Data types and variables- Arrays- Operators

UNIT II - OBJECT ORIENTED CONCEPTS

Control Statements Selection- Control Statement Iteration and jump Statement- Introducing classes- Class fundamentals- The General form of a class- Declaring Objects- Assigning object reference variables.

UNIT III - METHODS AND CLASSES

Introducing method – Constructors- The this Keyword- Garbage Collection- Finalize() method- Overloading methods- Overloading constructors- Using objects as parameters- Returning Objects- Recursion- Introducing access control- introducing final- Nested and Inner Classes- String class- command-Line arguments.

UNIT IV - INHERITANCE & EXCEPTION HANDLING

Inheritance Basics- using Super- method Overriding - abstract classes- Using final with Inheritance- Object class- Packages- Interfaces-Exception handling fundamentals- types- Using try, catch, throw, throws and finally exceptions.

UNIT V - MULTITHREADING, APPLLET AND STRING HANDLING

Java thread model -creating thread-Thread priorities-synchronization-Inter-thread communication-Deadlock- Applet fundamentals-string constructors- string operations- character Extraction- string comparison- searching strings- modifying a string.

REFERENCE BOOKS:

1. Naughton and H.Schildt, (2007), "Java 2-The complete reference", Fifth Edition, McGraw Hill.
2. Arnold and J.Gosling, (2000), "The java programming language", Second edition ,Addision Wesley.
3. Art Gittleman, (2002), "Ultimate Java Programming", First edition, Wiley Publications.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1532	Database Management Systems	3	0	3	6	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain knowledge in the areas of database design and SQL programming.
2. To understand relational database technology for building applications for the current trend.
3. To analyze a business situation and build suitable database applications.

UNIT I - INTRODUCTION

Data- Database – DBMS-File Processing System Vs DBMS- - Data Independence-Data Catalog-Three schema Architecture of a database-Functional components of DBMS - ER Model: Entity - Attributes and its Type -Entity and Relationship ship- Design Issues of ER Model - Constraints.

UNIT II - STRUCTURED QUERY LANGUAGE

Overview of SQL, Data Definition Commands, Set operations, Aggregate function, Null values, Data Manipulation commands, Data Control commands, Views in SQL, Nested and Complex queries

UNIT III - RELATIONAL-DATABASE DESIGN

Relational-Database Design: Design guidelines for relational schema, Function dependencies, Normal Forms- 1NF, 2 NF, 3NF, BCNF and 4NF. Integrity and Security in Database: Domain Constraints, Referential integrity.

UNIT IV - TRANSACTIONS MANAGEMENT

Transactions Management: Transaction concept, Transaction states, ACID properties, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of isolation.

UNIT V - CONCURRENCY CONTROL & PHYSICAL STORAGE MEDIA

Concurrency Control: Lock-based, Timestamp-based, Validation-based protocols, Deadlock handling, Recovery System: Failure Classification, Storage structure. Overview of Physical Storage Media: Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing –Ordered Indices– Static Hashing – Dynamic Hashing.

REFERENCE BOOKS:

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, (2006), "Database System Concepts", Fifth Edition, Tata McGraw Hill.
2. C.J.Date, A.Kannan, S.Swamynathan, (2006), "An Introduction to Database Systems", Eighth Edition, Pearson Education.
3. RamezElmasri, Shamkant B. Navathe, (2007), "Fundamentals of Database Systems", Fourth Edition , Pearson / Addisonwesley.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1533	Operating Systems And Unix	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To Implement Various Operating System Concepts.
2. To Perform Scheduling and memory management.
3. To Identify reasons of Deadlocks

UNIT I : Introduction

Definition – Mainframe system – Desktop Systems – Multiprocessor systems – Distributed systems – clustered systems – Real time and Hand held systems – System components – Os Services – System Calls – Programs – Structures

UNIT II : Process Scheduling & Synchronization

Process concepts – Process Scheduling – operation on Process – Cooperating process – IPC – CPU Scheduling: Basic Concepts – Scheduling criteria – Scheduling algorithms – Multiprocessor Scheduling – Real time Scheduling - Process Synchronization Background – The critical Section problem – synchronization hardware – semaphores – Classic Problems of Synchronization - critical Regions – Monitors - OS Synchronization

UNIT III : Deadlocks :System model

Deadlock Characterization – Methods for Handling Deadlocks – Deadlock prevention – Deadlock Avoidance – Deadlock Detection and Recovery from Deadlock

UNIT IV : Memory Management

Swapping – Contiguous memory Allocation – Paging – segmentation – segmentation with paging – Demand Paging – Process creation – Page Replacement – Thrashing

UNIT V : Case Studies On Unix Basics

Study of Open, Close, Read , Write. - Lseek, Dup - stat, fstat, and lstat functions. - File Types - Set user ID and Set Group ID - File Access Permissions- Study of Access, umask, Chmod, Link and Unlink Functions. - Mkdir and Rmdir - Reading Directories - chdir, fchdir and getcwd Functions.

REFERENCE BOOKS::

1. Abraham Silberschatz, Peter Baer Galvin & Greg Gagne, *“Operating System Concepts”*, Sixth Edition , John Wiley & Sons, Inc 2006.
2. MilankovicM , *“Operating System concepts and Design”*, 2nd edition, Tata Mcgraw hill 1992.
3. Brian W. Kernighan, Rob Pike, *“The Unix Programming Environment”*, PHI Learning Pvt. Ltd 1988.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1534	Management Information System	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. To understand the MIS implementation in decision making process
2. To review the models of MIS in various organization

UNIT-I SYSTEM CONCEPTS & STRUCTURE OF MIS

Introduction - Subsystems of MIS - Role of MIS Professional - Operating Elements of an Information System –MIS support for decision making- MIS structure based on organizational functions- Synthesis and Some Issues of MIS Structure

UNIT-II SURVEY OF INFORMATION SYSTEMS TECHNOLOGY

Computer Hardware & data Representation – microelectronics and instructing a computer- Communication Facilities and Networks - Wide Area Network and Distributed Systems -Physical & Logical Models of Data - File & Database Organizations - Transaction Processing Cycle - Document preparation- Message & Document Communication, Information Processing Control-Information system availability controls.

UNIT-III CONCEPTUAL FOUNDATIONS &SYSTEM SUPPORT

Phases in decision Making Process - Methods Of decision making process - Documenting and communicating decision rules - The Basic model of Organizational structure - Organization Structure Implications for Information System Design - Decision Support systems and Expert Systems - Approaches to develop decision support systems Knowledge work and different types- -Software support facilities for knowledge work

UNIT-IV INFORMATION SYSTEM REQUIREMENTS

Planning for information systems – The NOLAN stage model-Three stage model of planning process - Analysis of organizational information requirements - Three levels of information requirements and constraints - A strategy approach to determine information requirements – Determining application information requirements-Database Requirements- Data model concepts and terminology- Normalization in database design-Approaches in determining Data Requirements- User Interface Requirements and Interactive User Dialogue -Alternate interaction mechanisms

UNIT-V DEVELOPMENT, IMPLEMENTATION AND MANAGEMENT OF INFORMATION SYSTEM RESOURCES

Prototyping approach to application development - Life cycle approach to application development – Life cycle development stage-Project Management and Implementation of Information Systems - Organizational functions for control and quality assurance- Quality assurance with user developed systems and post audit evaluation –Auditing of information system- Organization of information resources functions - Organization and management of end user computing.

REFERENCE BOOKS:

1. Gordon B. Davis and Margrethe H. Olson. (2008), Management Information Systems Conceptual Foundations, Structure and Development, Tata McGraw Hill International Book Company, New Delhi
2. Kenneth C.Laudon and Jane P.Laudon (2013), Management Information Systems-Managing the Digital Firm, Pearson Education Asia, New Delhi.
3. WamanS.Jawadekar (2009), Management Information Systems, Tata McGraw Hill Education Pvt. Ltd., New Delhi.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1535	E-Commerce And M-Commerce	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To get an idea about Electronic Commerce and Electronic Data Interchange.
2. To know and implement Secured Business activities over Internet.
3. To gain information on Mobile Commerce.

UNIT-I-INTRODUCITON

Introduction to E-Commerce, Business of Internet, N/W Security & Firewalls: E-Commerce Framework, E-Commerce and Media Convergence - Anatomy of E-Commerce Applications - E-Commerce Consumer and Organization Applications - Telco/Cable/Online Companies- National Independent ISPs- Regional-level ISPs - Local level ISPs - Service Providers Abroad- Network Interconnection Points - Internet Connectivity Options - Client-Server Network Security - Emerging Threats - Firewalls and Network Security - Data and Message Security - Challenge Response Systems- Encrypted Documents and E-Mail.

UNIT-II E-COMMERCE

E-Commerce & WWW, Consumer Oriented E-Com, E-Payment System: Architectural Framework for E-Com - WWW as the Architecture - Web background: Hypertext Publishing - Technology behind the Web - Security and the Web - Consumer Oriented Applications - Mercantile Process Models - Types of Electronic Payment System - Digital Token based e-payment systems - Smart Card e-payment system -Credit Card e - payment system- Risk and e-payment system - Designing e-payment system

UNIT-III EDI

Inter Organizational Commerce & EDI, EDI Implementation, Advertising and Marketing on the Internet: EDI - EDI Application in Business - EDI: Legal, Security and Privacy Issues - EDI and E-commerce - Standardization and EDI - EDI Software Implementation - EDI Envelope for Message Transport-Value Added Networks - Internet based EDI - The New Age of Information Based Marketing - Advertising on the Internet - Charting the Online Marketing Process - Market Research

UNIT-IV INTERNET BUSINESS AND SECURITY

Challenges of the Internet Business- Business and Technology, M-Commerce: Challenges of the internet business - Business and technology - Positive and negative effects of the internet - Value chain - Planning and execution - Internet security standards - secure electronic payment protocols ; cryptography and authentication - security issues - encryption techniques.

UNIT-V M-COMMERCE

M-commerce-what is m-commerce? - Mobility and m-commerce - Location information: Asset - Customer Care, Billing and Revenue Assurance, the Internet Business Model: the Future and its Economics: Mobility & customer care - Billing and revenue assurance – OSS - The internet business model: Future and its economics - Public right and regulation - Internet Based model – OP - The next generation internet: Mobile Internet - The Next Generation Internet: Economics

REFERENCE BOOKS:

1. Kalakota&Whinston (1996), Frontiers of Electronic Commerce – Addison Wesley, New York
2. Louis(P J) (2001), M-Commerce Crash Subject: The Technology And Business Of Next generation – McGraw Hill, New York
3. Marilyn Greenstein and Todd M Feinman , (2000), "Electronic commerce: Security, Risk Management and Control" Tata McGraw-Hill,.
4. David Whiteley (2000), E- Commerce, Strategy, Technologies and Applications – Tata McGraw hill, New Delhi.
5. U.S.Pandey, Rahul Srivastava, SaurabhShukla (2007), E-Commerce and its Applications - -S.Chand& Co., New Delhi.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
GEN1536	Value Education	1	0	2	3	3

INSTRUCTIONAL OBJECTIVES:

1. To define values understand its broad implications in life.
2. To demonstrate an acknowledgement and acceptance of the realities of diversity(ethnicity, culture, spirituality/religion)
3. To develop an understanding of how values influence decision making and behavior
4. To recognize the need to live together in atmosphere of peace and contributing to sustainable development
5. To familiarize the students with the concepts of "right" and "good" in individual and social context
6. To develop in them the sense of respect for the teachings and values of every Religion.
7. To understand the core value and sub value in cross-cultural context.

To familiarize the students with the concepts of "right" and "good" in individual and social context

Help him/her determine what action or life is best to do or live - Right conduct and good life - Explications for how a highly, or at least relatively highly, valuable action may be regarded as ethically "good" , and an action of low, or at least relatively low, value may be regarded as "bad"Value systems- Positive and negative value

Perceptual, Cognitive and Emotional Development (friendships, peers, moral development) - Emotions revealed and Emotions assessed - EQ Tests

One Thing Affects Many Things — Systems Thinking - The Exchange Between Trees and Humans

Cross Cultural Learning - Inclusive humanism - The inclusive sensibility of all species, planet and lives - Animalism- theory of evolution - Religious Values (Reference to World Religion)

Perspective Discussions - Movies related to ethnical and social issues will be aired - Videos related to value inculcation will be aired

REFERENCE BOOKS:

1. Moral Element by Dr.Shanthichitra, Published by Department of English, FSH, SRM University, Chennai.
2. Collective Learning for Transformational Change by Valerie A.Brown, Judith A.Lambert
3. Defining the Humanities by Robert Proctor
4. The Moral Animal by Robert Wright

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1537	Information Literacy	0	1	3	4	3

Information literacy is a set of abilities requiring individuals to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.” Information is available through libraries, community resources, special interest organizations, media, and the Internet—and increasingly, information comes to individuals in unfiltered formats, raising questions about its authenticity, validity, and reliability. In addition, information is available through multiple media, including graphical, aural, and textual, and these pose new challenges for individuals in evaluating and understanding it. Information literacy forms the basis for lifelong learning. It enables learners to master content and extend their investigations, become more self-directed, and assume greater control over their own learning. An information literate individual is able to:

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Incorporate selected information into one’s knowledge base
- Use information effectively to accomplish a specific purpose
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally

REFERENCE BOOKS:

1. Information Literacy Competency Standards for Higher Education, American Library Association, 2000.
2. <http://www.ala.org/acrl/ilcomstan.html>

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
SPD1538	Soft Skills And Verbal Aptitude	0	0	2	2	2

INSTRUCTIONAL OBJECTIVES

To equip the students with the required soft skills that would instill confidence and courage in them, to take up new opportunities for their career

Self-analysis - Attitude perceptions– Positive approach to challenges.

Change management – ideas & approach -Goal setting – vision -

Time management planning -

Entrepreneurial skills Leadership skills -

People management – team work, leadership. Decision making – problem identification

Verbal communications- Synonyms - Antonyms - Idioms and phrases - Sentence completion - - Sentence correction - Reading comprehension -

Case studies (Topics: Current affairs across all related fields - and other such topics of the general criteria)

Text Book

Career Development Department. “INSIGHT.” SRM University.

REFERENCE BOOKS:

1. Mitra, Barun K. “Personality Development and Soft Skills.” Oxford University Press, Delhi , 2013.
2. Managing Soft Skills for Personality Development. Ed. B. N. Gosh. Tata McGraw Hill Education Pvt Ltd,
3. Kumar, Sujit. “The Pearson Guide to Verbal Ability for the CAT and Other MBA Examinations. Pearson Publication, 2013.

- Sharma, Arun.,MeenakshiUpadhya "How to Prepare for Verbal Ability and Reading Comprehension for CAT. McGraw Hill Education (India) Private Limited; 4 edition, 2011.

SEMESTER IV

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1541	Advanced Java Programming	3	0	3	6	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

- To understand and Implement Various Database Connectivity Concepts.
- To develop program for Socket programming.
- To learn and develop Applets.

Unit I: JDBC

Overview - Connection Class - MetaData Function - SQLException - SQL warning - Statement - ResultSet - Other JDBC Classes.

Unit II: TCP/IP

InetAddress - TCP/ IP client sockets - TCP/ IP server sockets - URL - URL Connection - Datagrams - Client/ Server application using RMI.

Unit III: BEAN

Bean Development Kit - Jar Files - Introspection - Design Pattern for properties, events and methods - Constrained Properties - Persistence – Customizers

Unit IV:

Life Cycle of Servlet - Generic Servlet - HTTP Servlet - Reading Initialization Parameters - Reading Servlet Parameters - Cookies - Session Tracking

Unit V:

JApplet - Button - Combo - Trees - Tables - Panes - AWT Classes - working with Graphics, Color and Font

REFERENCE BOOKS:

- Patrick Naughton& Herbert Schildt, "The Complete Reference: Java 2", Tata McGraw Hill, 1999.
- Joseph Weber, "Using Java 2 Platform", Prentice Hall of India, 2000.
- Deitel&Deitel, "Java How to Program", Prentice Hall, 5th Edition ,2002
- Peter Hagggar, "Practical Java: Programming Language Guide", Addison-Wesley Pub Co, 1st Edition, 2000
- Bruce Eckel, "Thinking in Java", Pearson Education Asia, 2nd Edition, 2000.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1542	Computer Networks	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

- To Identify Network Architecture and select appropriate network topology
- To identify congestion controls and deadlock algorithms.

UNIT-I INTRODUCTION TO COMPUTER NETWORKS

Introduction to computer networks – Uses of network-Network structure – The OSI reference model concepts – Layers of the OSI model.

UNIT-II PHYSICAL LAYER

The physical layer-Different types of transmission medium-CODEC-Switching techniques-Channel allocation methods-ALOHA protocol-LAN protocol (any one protocol)-IEEE standards 802.3, 802.4 and 802.5.

UNIT-III DATA LINK LAYER

The data link layer – design issues – Concept of framing – Different methods – Error detection and correction: Single error correction and cyclic redundancy check.

UNIT-IV NETWORK LAYER

The network layer – design issues – Internal organization of network layer – Congestion control algorithm, Leaky bucket algorithm and token bucket algorithm – Dijkstra routing algorithm.

UNIT-V TRANSPORT, SESSION, PRESENTATION, AND APPLICATION LAYER

Repeaters, Bridges, Routers and Gateways-Brief introduction to the transport layer, session layer, presentation layer and application layer-Basic concepts of Internet – WWW.

REFERENCE BOOKS:

1. Andrew S. Tanenbaum, *“Computer Networks”*, Third Edition, Prentice Hall of India 2011.
2. W. Stallings, *“Data and computer communication”*, Eighth edition, Prentice Hall of India. 2007.
3. Behrouz and Forouzan, *“Introduction to data communications and networking”*, ForthEdition ,McGraw Hill 2007.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1543	Software Engineering	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To classify the various Software Process Models
2. To appreciate SQA and SCM principle
3. To build an Analysis Model and subsequently architect a suitable design
4. To understand Testing Strategies and Testing Tactics

UNIT I - THE PRODUCT AND THE PROCESS

The Evolving Role of Software– Software Characteristics– Software Applications– Software: A Crisis on the Horizon?- Software Myths- Software Engineering: A Layered Technology– The Software Process– Software Process Models– The Linear Sequential Model– The Prototyping Model- The RAD Model- Evolutionary Software Process Models- Component-Based Development.

UNIT II - SOFTWARE QUALITY ASSURANCE AND SCM

Quality Concepts– Software Quality Assurance– Software Reviews– Formal Technical Reviews– Formal Approaches to SQA – Statistical Software Quality Assurance– Software Reliability– Software Configuration Management- The SCM Process- Identification of Objects in the Software Configuration- SCM Standards.

UNIT III - SYSTEM ENGINEERING AND ANALYSIS CONCEPTS

Computer-Based Systems– The System Engineering Hierarchy – Business Process Engineering: An Overview– Product Engineering: An Overview– Requirements Engineering– System Modeling– Requirement Analysis- Requirements Elicitation for Software- Software Prototyping- Specification- Specification Review.

UNIT IV - ANALYSIS MODELING AND DESIGN CONCEPTS

Data Modeling – Data Flow Diagrams – Behavioral Modeling – The Mechanics of Structured Analysis – The Data Dictionary – Software Design and Software Engineering – The Design Process – Design Principles – Design Concepts – Effective Modular Design – Design Heuristics for effective Modularity – The Design Model – Design Documentation.

UNIT V - SOFTWARE TESTING TECHNIQUES

Software Testing Fundamentals– Test Case Design- White-Box Testing– Basis Path Testing– Control Structure Testing – Black-Box Testing– A Strategic Approach to Software Testing– Unit Testing – Integration Testing– Validation Testing– System Testing.

REFERENCE BOOKS:

1. Roger S. Pressman, (2001), "Software Engineering ",Fifth edition, McGraw-Hill Higher Education-A Division of The McGraw-Hill Companies.
2. Ian Sommerville, (2008) , "Software Engineering", 9th edition , Pearson Education India
3. Richard E.Fairly (2004), Software Engineering Concepts - Tata McGraw-Hill book Company.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1544	Information Security	4	1	0	5	4

UNIT I : INTRODUCTION

History, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC, Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues.

UNIT II : SECURITY ANALYSIS

Risk Management : Identifying and Assessing Risk, Assessing and Controlling Risk.

UNIT III : LOGICAL DESIGN

Blueprint for Security, Information Security Poicy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity

UNIT IV : PHYSICAL DESIGN

Security Technology, IDS, Scanning and Analysis Tools

UNIT V : NETWORK AND COMPUTER SECURITY

Cryptography, Access Control Devices, Physical Security, Security and Personnel

REFERENCE BOOKS:

1. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2003.
2. Ron Weber, "Information Systems Control and Audit", Pearson Education, New Delhi, 2004.
3. Micki Krause, Harold F. Tipton, " Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
4. Stuart McClure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw Hill, 2003.
5. Matt Bishop, " Computer Security Art and Science", Pearson/PHI, 2002.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1545	Mobile Computing	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

- To gain information about Transmission over Wireless network.
- To know about the different Layers in Mobile Network.
- To understand and to implement Broadcasting over Wireless Network.

UNIT I : WIRELESS TRANSMISSION

History of wireless Communication- Applications of Wireless and mobile communication -Frequencies for Radio Transmission-Signals - Antennas-Signal propagation – Multiplexing: Introduction – SDM – FDM – TDM – CDM – Spread spectrum – Cellular System

UNIT II : MODULATION AND SWITCHING

Introduction andTypes of Modulation – ASK – FSK - PSK -Medium access control – Motivation for a specialized MAC – SDMA–FDMA – TDMA-CDMA-Comparing FDMA/CDMA/TDMA

UNIT III: TELECOMMUNICATION SYSTEMS

GSM- DECT – TETRA-UMTS and IMT -2000-Satellite systems-GEO satellite - LEO satellite-MEO satellite -Routing -Localization and Handover

UNIT IV : BROADCAST SYSTEMS

Cyclical repetition of data - Digital Audio Broadcasting-Digital Video Broadcasting – Convergence of broadcasting and mobile communications - Wireless LAN: Infrared Vs Radio Transmission – Infrastructure and ad-hoc network -IEEE 802.11 – HIPERLAN - Bluetooth

UNIT V : MOBILE NETWORK LAYER

Mobile IP- Dynamic host configuration protocol - Mobile ad-hoc networks- Traditional TCP -Classical TCP improvements -Support for mobility – WWW – WAP- Case study: Android OS,Symbion OS

REFERENCE BOOKS:

1. Jochen Schiller, *"Mobile Communications – Pearson Education"*, 2nd Edition, New Delhi , 2009.
2. William Stallings, *"Mobile Communications and Networks"* – Pearson Education, New Delhi, 2005.
3. C.Y.Lee& William, *"Mobile Cellular Telecommunication"*– McGraw Hill Inter Edition, New Delhi, 1997.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1546	Unix And Network Programming	0	2	3	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To store and retrieve the information from Unix Files.
2. To perform Inter process communications.
3. To implement Echo Client / Server using TCP and UDP.
4. To develop client/server applications using the standard UNIX network programming protocols.

UNIT 1: FILES & DIRECTORIES

Study of Open, Close, Read , Write. Lseek, Dup -stat, fstat, and lstat functions-.File Types -Set user ID and Set Group ID - File Access Permissions -Study of Access, umask, Chmod, Link and Unlink Functions-Mkdir and Rmdir -Reading Directories -chdir, fchdir and getcwd Functions.

UNIT 2: PROCESS CONTROL & SIGNALS

Time and Date Routines-Setjmp and Longjmp Functions -Fork , Vfork -Exec -wait and waitpid -wait3 and wait4 -Signal concepts, signal function -kill and raise – alarm and pause – abort and sleep - sigprocmask – sigpending – sigaction.

UNIT 3: INTER PROCESS COMMUNICATION

Pipes - FIFO-System V IPC – Introduction-Message Queue-Message Queues – Example Program - Semaphores - Example Program -Shared Memory- Example Program

UNIT 4: SOCKET PROGRAMMING

Sockets – Introduction -Elementary TCP Sockets -TCP Echo Client/ Server -Elementary UDP Sockets -UDP Echo Client/ Server-gethostbyname&gethostbyaddr, getservbyname&getservbyport – getaddrinfo -tcp_connect and tcp_listen, udp_client, udp_connect and udp_server.

UNIT 5: DAEMON PROCESS & DATA TRANSMISSION

Syslogd Daemon -syslog function -inetd Daemon -Broadcast Addresses – Unicast Versus Broadcast - Multicast Addresses - Multicasting Versus Broadcasting on LAN, Multicasting on WAN -Raw Socket : Creation – Input – Output -Datalink Access : BPF – DLP -SOCK_PACKET

REFERENCE BOOKS:

1. Richard Stevens .W & Stephen Rago - Advanced Programming in the UNIX Environment – 2nd Edition - Pearson Education Asia - 2005
2. Richard Stevens .W - UNIX Network Programming, Volume II - Prentice Hall, 1999.
3. Stephen A.Rago – Unix System V Network Programming – Addison Wesley – 1993.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1547	Technical Writing	0	1	3	4	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand and to follow the several standards in Technical Document Development.
2. To know about several Technical documents in Software Industry.
3. To follow the guidelines in Developing Technical Document

UNIT I : OVERVIEW OF TECHNICAL WRITING

Categories of Documents, Nuances of English usage in Technical writing, Technical writing process guidelines, The role of tools in technical writing, Essential skills of technical writing, Careers in Technical writing.

UNIT II : STRUCTURED DESCRIPTION

Role, mechanism and process, Structured layout: Hierarchical, vertical, horizontal, linear and non-linear, Information chunk and structural clash.

UNIT III :WRITING TECHNICAL DOCUMENTS

Instruction Manual, User Manual, Installation Manual, Maintenance Manual.

UNIT IV :SOFTWARE REQUIREMENT SPECIFICATION (SRS)

Importance of writing an SRS, Involvement of Technical writing, SRS content layout, Case studies of SRS samples. Online help, Technical description, Specification Sheets, Frequently asked questions, Letters

UNIT V : GUIDELINESS

Electronic communication, Document design aspects, Ethical norms in technical writing, Remedial measures – use and misuse

REFERENCE BOOKS:

1. Sharon J. Gerson & Steven M. Gerson "Technical Writing - Process & Product", Pearson Education.
2. Eisenberg, "Effective Technical Communication", Mc. Graw Hill.
3. Software Requirements and Specifications: A Lexicon of Practice, Principles and Prejudices (ACM Press) Paperback – September 2, 1995 by Michael Jackson

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
SPD1548	Quantitative Aptitude And Reasoning I	0	0	2	2	2

QUANTITATIVE APTITUDE

Partnership
Simple Interest, Compound Interest
Profit and Loss
Problems on Clock, Calendar and Cubes
Permutation and Combination
Allegation and mixtures

LOGICAL REASONING

Letter and Symbol series
Number series
Analyzing arguments
Making judgments

REFERENCE BOOKS:

R.S. Aggarwal, "Quantitative Aptitude for Competitive Examinations", 7th Revised Edition, S.Chand and Co. Ltd, New Delhi, 2005

SEMESTER V

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1551	Cloud Computing	3	0	3	6	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To know the Basics of Cloud.
2. To get knowledge about several service models of Cloud and its security.
3. To manage the disasters and to recover data from disasters.

UNIT I : CLOUD BASICS

Cloud computing , history- Pros and cons- Cloud architecture- Cloud architecture- Choice of cloud computing- Choice of cloud computing

UNIT II : CLOUD SERVICES

Various cloud services- Platform as a service- Platform as a service- Software as a service- Software as a service- Infrastructure as a service- Design of web application- Machine, privacy and data management- Other cloud services

UNIT III : CLOUD SECURITY

Cloud security- Infrastructure security- Data security and storage- Network security – I- Network security – II- Host security

UNIT IV : DISASTER RECOVERY AND MANAGEMENT

Disaster recovery and management- Disaster recovery- Disaster recovery planning- Disaster in the cloud- Disaster management.

UNIT V : VIRTUALIZATION

Virtualization objectives- Why Virtualize- How to Virtualize- Concerns- security- Microsoft HyperV- VMWare- VMWare infrastructure

REFERENCE BOOKS:

1. George Reese, *"Cloud Application Architectures: Building Applications and Infrastructures in the cloud"*, O'Reilly Media Inc, 2009.
2. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, *"Cloud Computing A practical Approach"*, McGraw Hill 2010.
3. Miller Michael, *"Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online"*, Que Publishing 2008.
4. Beard Haley, *"Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing"*, Applications and Data 2008.
5. *"Centers in the Cloud with SLAs"*, Emereo Pvt. Limited.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1552	Enterprise Resource Planning	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To provide a basic understanding and knowledge of the Enterprise Computing techniques used in industries
2. To analyze and propose IT solutions for the integration of business process throughout the enterprise
3. To aim for careers in various ERP consultancies, ERP-support services and Software Developers

UNIT I - INTRODUCTION

ERP: An Overview- Enterprise – An Overview-Benefits of ERP, ERP and Related Technologies- Business Process Reengineering (BPR)- Data Warehousing- Data Mining- OLAP- SCM

UNIT II - ERP IMPLEMENTATION

ERP Implementation - Lifecycle - Implementation Methodology-Hidden Costs- Organizing the Implementation-Vendors- Consultants and Users- Contracts with Vendors- Consultants and Employees- Project Management and Monitoring

UNIT III - THE BUSINESS MODULES

Business modules in an ERP Package- Finance- Manufacturing- Human Resources- Plant Maintenance- Materials Management- Quality Management- Sales and Distribution

UNIT IV - THE ERP MARKET

ERP Market Place- SAP AG- Peoplesoft- Baan- JD Edwards- Oracle- QAD- SSA

UNIT V: ERP - PRESENT AND FUTURE

Turbo Charge the ERP System- EIA- ERP and e-Commerce- ERP and Internet- Future Directions

REFERENCE BOOKS:

1. Alexis Leon,(2000)"ERP Demystified",Tata McGraw Hill, New Delhi. ,(For Units I to III)
2. Joseph A Brady, Ellen F Monk, Bret Wagner, (2001) "Concepts in Enterprise Resource Planning", Thompson Course Technology, USA.(For Units IV to V)
3. Vinod Kumar Garg and Venkitakrishnan N K , (2003) "Enterprise Resource Planning – Concepts and Practice", PHI, New Delhi ,
4. Jagan Nathan Vaman,(2007), ERP Strategies for Steering Organizational Competence and Competitive Advantage, Tata McGraw-Hill Education

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1553	Data Mining And Warehousing	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand the Data Mining Concepts and Architecture.
2. To implement several Techniques and Tools of Data Mining.
3. To gain the knowledge of Backup and Recovery Management.

UNIT I : DATA MINING CONCEPTS & ARCHITECTURE

Introduction – Data Mining Definitions - k-nearest neighbor - Data Mining Tools-Applications of Data Mining - Anatomy of Data Mining - Learning: types of learning -Machine learning-Knowledge: types of Knowledge-Knowledge discovery process- Architecture of Data Mining

UNIT II : DATA MINING TECHNIQUES

Visualization Techniques – Likelihood & distance-Neural Networks-Decision Tree technique-Constructing decision trees-ID3 algorithm-Genetic algorithms: Crossover & mutation -Clustering: Distance function-K-means algorithm -Hierarchical Clustering - Applications -Association rules: Apriori algorithm.

UNIT III : DATA WAREHOUSING CONCEPTS & ARCHITECTURE

Introduction - Goals- data warehouse users - Types of Data Warehouse-Data warehouse objects: fact table & Dimension table-Load Manager-Warehouse Manager-Query Manager-Data Warehouse Schemas: Star schemas-Snowflake Schemas.

UNIT IV : DATA WAREHOUSE PARTITIONING &AGGREGATION

Horizontal Partitioning-vertical Partitioning-Hardware Partitioning-Software partitioning Methods-Aggregation-Designing Summary tables-Designing Summary tables

UNIT V : DATA MARTS, META DATA, BACKUP &RECOVERY :DATA MARTS

Introduction-Estimating Design – Cost-Meta Data-Backup : Types of backup-Backup the data warehouse – SureWest Online Backup-Recovery : Strategies-various Testing Strategies-Various Recovery models, Disaster Recovery procedure

REFERENCE BOOKS:

1. S. Prabhu , N. Venkatesan "*Data Mining & Warehousing – New Age International – First Edition*", New Delhi 2006.
2. Sam Anahory , Dennis Murray, "*Data Warehousing in real world – Pearson Education*", New Delhi 2004.

- Pieter Adriaans ,DolfZantinge, *"Data Mining – Pearson education"*, New Delhi 2005.
- Alex Berson, Stephen J.Smith *"Data Warehousing, Data mining & OLAP – Tata McGraw Hill Publications"*, New Delhi 2004.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1554	Cyber Crime And Laws	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

- To understand about Cyber Crime basics.
- To know the several Laws of Cyber Crime.
- To gain knowledge of Information Theft and to prevent it.

UNIT I : INFORMATION AGE AND CYBER CRIME

Cyber Space - Relationship between Computers Crime and Law - Brief Historical Perspective of Criminal Law - Classification of Crimes - Criminal Responsibility - Theories of Aetiology of Crime - Theories and objectives of Punishment - The Organized Crime - The "White-Collar" Crime - Cyber Crime - Cyber Crime: Definition of "Computer Crime" - Computer Crime categories - Types of Computer Crimes -Classification of Computer Crime - Crime on Web - Indian Scenario - Cyber Jurisdiction - Definition of Cyber Jurisdiction - Model for Jurisdictional Analysis

UNIT II : CYBER CRIME AND CRIMINAL CODIFICATION IN INDIA

Indian Penal Code: I to III - Indian Penal Code: IV to VI - Indian Penal Code: VII to IX - Indian Penal Code: X to XII - Indian Penal Code: XIII to XV - Indian Penal Code: XVI to XVIII - Protection of Intellectual Property –I – Patents - Indian Patent Law - Trade Marks – Databases

UNIT III : PROTECTION OF INTELLECTUAL PROPERTY – II

Copyrights - Digital Signature - Working of Digital Technology - Privacy Issues in the Information Age - Privacy and Surveillance - Privacy: Meaning - Legal Perspective and Framework - Kind and Pattern Intrusions Motive - Methods of Attack - Topology of Intruders - Global Differences - Future Issues

UNIT IV : COMMUNICATION NETWORK AS SURVEILLANCE TOOL

The Web – Intelligence- Tool – Espionage - The Interlude - Data and Information Processing - The operations - The Tradecraft - The armament - Economic Intelligence and Attacks - Web or Net Crimes - Information Warfare - Hackers Psychology and Laws Related To Hacking - Genesis of the term Hacker - Theories of Delinquency

UNIT V : IDENTITY AND INFORMATION THEFT

Identity Theft case Files - Avoid being an Easy Target - Cyber Fraud and Electronic Misuse - Definition of Computer Fraud or cyber Fraud - Characteristics Cyber Fraud Offence - How the Victims and Cyber Fraud are Deceived? - The legal Issues - Fraud-Related Offenses - Protection of Cyber Crimes - Encryption in Crime and Terrorism - Law Enforcement Options - Other Technologies for Hiding Evidence - Concealing Crimes through Anonymity

REFERENCE BOOKS:

- Prof.ParagDiwan, Dr.R.K.Suri and Dr.SanjayKaushik (2003), Cyber Crime (Volume: 11,IT Encyclopaedia.com , Pentagon Press, New Delhi, 4th Edition
- Johnson, Thomas A. (2006), Forensic Computer Crime Investigation Boca Raton-Fla: CRC –Press, New York.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1555	XML And Web Services	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

- To learn and implement the Markup language programming concepts.
- To understand the AJAX technology and to use it in application development.
- To gain the information about SOAP.

UNIT I : INTRODUCTION TO XML

Introduction to XML and its need-XML Revolution – Data Revolution - XML Revolution – Architectural and Software revolution-The XML Technology family-Structure and data typing-The XML Technology family- Presentation Technologies-The XML Technology family- Manipulation Technologies.

UNIT II : XML PRESENTATION, MANIPULATION TECHNOLOGIES

XML Document rule-XML structuring rule and Related Data type-XML presentation – CSS – XSL- XSLT (operations) –XPath, Xlink and XQuery-Introduction to XSL-FO-XML – Forms-Uses of Voice XML with a block diagram.

UNIT III : ASYNCHRONOUS JAVASCRIPT AND XML – AJAX

Introduction and Need for AJAX-AJAX Basics - AJAX Architecture-Ajax Web Application Model-Ajax Patterns - Ajax control Toolkit - Ajax controls

UNIT IV : SOAP PROTOCOL & WEB SERVICES

Purpose of SOAP - SOAP Protocol-Approaches to SOAP-SOAP Architecture-XML-RPC-Structure of HTTP Request-Introduction to SOAP faults-Concepts of SOAP Attachments-Introduction to Web Services-UDDI Model & Security on XML.

UNIT V : SEMANTIC WEB

Introduction to Semantic Web: Needs, Evolution. Types of Data etc.,-Levels of Semantics-The layered Architecture: URI, UNICODE, XML NS, RDF-The layered Architecture: Ontology, logic, proof, trust and Digital signature-Un-Resource Description Framework (RDF)-Web Ontology Language (OWL).

REFERENCE BOOKS:

1. Frank. P. Coyle (2002), XML, Web Services and the data revolution - Pearson Education, New Delhi
2. Ajax (2008) – Black Book New Edition – Kogent Solutions Inc - Dreamtech Press
3. Grigoris Antoniou and Frank Van Harmelen (2004), A Semantic Web Primer - The MIT Press, Cambridge, Massachusetts London, England
4. Ramesh Nagappan, Robert Skoczylas and Rima Patel Sriganesh (2004), - Developing Java Web Services - Wiley Publishing Inc., New Delhi.
5. SandeepChatterjee, James Webber (2004), Developing Enterprise Web Services -, Pearson Education, New Delhi

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1556	PHP And MySQL Programming	0	2	3	5	3

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. Declare variables and initialize them, construct expressions with arithmetic, logical and relational operators, use iterative type statements
2. Use conditional statements, read/write text and binary files, manipulate text using regular expression
3. Use and code functions, built-in library functions, arrays and hashes

UNIT I - INTRODUCTION TO PHP

Introduction to PHP – what does PHP Do?. – a brief history of PHP – language basics – lexical structure – data types – variables – expressions and operators – flow control statements – including code – embedding PHP in web pages.

UNIT II - FUNCTIONS & STRINGS

Functions & Strings: Calling a function – defining a function – variable scope – function parameters – return values – variable functions – anonymous functions. Strings : Accessing individual characters – cleaning strings – encoding and escaping – comparing strings – manipulating and searching strings – regular expression.

UNIT III - ARRAYS AND OBJECTS

Arrays and Objects : Indexed Vs associative arrays – identifying elements of an array – storing data in arrays – multidimensional arrays – extracting multiple values – converting between arrays and variables – traversing arrays – sorting. Objects : Creating an object – accessing properties and methods – declaring a class – introspection.

UNIT IV - MYSQL AN OVERVIEW

Introduction – connecting to and disconnecting from the server – Entering queries – Creating and using a database – Creating and selecting a database – creating a table – loading data into a table – Retrieving information from a table – selecting all data – selecting particular rows – selecting particular columns – sorting rows – date calculations – working with NULL values – pattern matching – counting rows – using more than one tables.

UNIT V - MYSQL DATABASES IN PHP

Introduction – connecting to a MySQL database – querying the database – Retrieving and displaying the results – modifying data – deleting data. Designing simple applications.

REFERENCE BOOKS:

1. Programming PHP, (2008), Rasmus Lerdorf and Kevin Tatroe with Bob Kaehms and Ric McGredy, O'REILLY (SPD).
2. PHP 5 Recipes (2005), A problem solution approach, Lee Babin, Nathan A. Good, Frank M. Kromann, Jon Stephens
3. PHP Programming with MySQL: (2005), The Web Technologies Series . PHP and MySQL (2012) Mike Mcgrath

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
SPD1557	Entrepreneurial Development	0	0	3	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. Understanding of the sources of opportunities and development of the skills to identify and analyze these opportunities for entrepreneurship.
2. Understanding of the industry dynamics of and factors for developing successful innovations and apply this understanding to different sectors.
3. Development of a personal skill set for entrepreneurship and specific concepts and tools for combining and managing an organization.

UNIT I:

Concept of Entrepreneurship -Entrepreneurship – Meaning – Types – Qualities of an Entrepreneur – Classification of Entrepreneurs – Factors influencing Entrepreneurship – Functions of Entrepreneur

UNIT II:

Entrepreneurial Development – Agencies Commercial Banks – District Industries Centre – National small Industries Corporation – Small Industries Development organization – Small Industries Service Institute. All India Financial Institutions – IDBI – IFCI – ICICI – IRDBI.

UNIT III:

Project Management Business idea generation techniques – Identification of Business opportunities – Feasibility study – Marketing, Finance, Technology & Legal Formalities – Preparation of Project Report – Tools of appraisal.

UNIT IV:

Entrepreneurial Development Programmes (EDP) – Role, relevance, and achievements – Role of Government in organizing EDPs – Critical Evaluation.

UNIT V:

Economic development and entrepreneurial growth Role of entrepreneur in economic growth – Strategic approaches in the changing Economic scenario for small scale Entrepreneurs – Networking, Niche play, Geographic Concentration, Franchising/Dealership – Development of Women Entrepreneurship.

REFERENCE BOOKS:

1. Dr. Gupta C.B., Dr.Srinivasan N.P, "*Entrepreneurial Development*", Sultan Chand & Sons, 2009.
2. Saravanavel P., "*Entrepreneurial Development*", Ess Pee kay Publishing House, 1997.
3. Vasant Desai, "*Project Management*", Himalaya Publishing House, 1999.
4. Jayshree Suresh, "*Entrepreneurial Development*", Margham Publications, 2010.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
SPD1558	Quantitative Aptitude And Reasoning II	0	0	2	2	2

QUANTITATIVE APTITUDE

Time and Distance
 Height and Distance
 Problems on Ages, Trains
 Pipes and Cistern Boats and Streams
 Probability

LOGICAL REASONING

Direction Sense test
 Venn diagrams
 Seating arrangements
 Cause and effect
 Blood relation test
 Dice
 Logical verbal puzzles

REFERENCE BOOKS::

R.S.Aggarwal, "Quantitative Aptitude for Competitive Examinations", 7th Revised Edition, S.Chand and Co. Ltd, New Delhi, 2005

SEMESTER VI

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1561	Big Data And Its Application	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand the mechanism of handling Big Data.
2. To learn and implement the HADOOP technology.
3. To implement the Framework.

UNIT I : INTRODUCTION TO BIG DATA PLATFORM

Challenges of Conventional Systems - Intelligent data analysis Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

UNIT II : MINING DATA STREAMS

Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

UNIT III : HADOOP

History of Hadoop- The Hadoop Distributed File System – Components of Hadoop- Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS-Java interfaces to HDFS- Basics-Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types, Formats & Features

UNIT IV : HADOOP ENVIRONMENT

Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenance-Hadoop benchmarks- Hadoop in the cloud

UNIT V : FRAMEWORKS

Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper - IBM InfoSphere BigInsights and Streams. Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications

REFERENCE BOOKS:

1. Michael Berthold, David J. Hand, *"Intelligent Data Analysis"*, Springer. 2007.
2. Tom White, *"Hadoop: The Definitive Guide"* Third Edition, O'reilly Media 2012.
3. Anand Rajaraman and Jeffrey David Ullman, *"Mining of Massive Datasets"*, Cambridge University Press 2012.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1562	Software Testing	3	1	2	6	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To develop and implement an effective test strategy, you can successfully manage software test efforts.
2. To apply the effective test strategy, including feedback mechanisms, and recognizing the critical issues as they surface

UNIT-I Introduction to software testing :Introduction to software testing-The Psychology of Testing-The Economics of Testing - Software Testing Principles-Inspections and Walkthroughs-Code Inspections -An Error checklist for Inspections-White-box testing-Error guessing

UNIT-II Module (unit) testing, higher- order testing & debugging: Test-Case Design -Incremental Testing-Top-down versus Bottom- up Testing-Function Testing- System Testing -Acceptance Testing-Installation Testing-Debugging.

UNIT-III The realities of software testing & testing the software:SDLC Models -STLC Model -Software Testing Terms and Definitions-Testing Fundamentals-Dynamic Black-Box Testing Equivalence Partitioning-Data Testing-State Testing.

UNIT-IV Applying testing skills : Configuration Testing -Compatibility Testing-Usability Testing-Testing the Documentation--Web Site Testing -Testing for Software Security

UNIT-V Automated testing and test tools & bug reporting :Automated Testing and Test Tools: -benefits-Test Tools-Software Test Automation-Bug Bashes and Beta Testing-Writing and Tracking

REFERENCE BOOKS:

1. Glenford J. Myers, *"The Art of Software Testing"*, Second Edition, John Wiley & Sons, New Delhi 2008.
2. Ron Patton, *"Software Testing"*, Second Edition, SAMS Techmedia Publication 2007.
3. William E.Perry, *"Effective Methods for Software Testing"*, Second edition, John Wiley & Sons, New Delhi 2000.
4. Boris Beizer, *"Black-Box Testing: -Techniques for Functional Testing of Software and Systems"*, Second edition John Wiley & Sons, New Delhi1995.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1563	Information And Storage Management	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To know the Data Storage Management.
2. To learn about Virtual Storage of Data.
3. To gain knowledge of Security Management.

UNIT I : INTRODUCTION

Introduction to Storage Technology - information storage, evolution of storage technology and architecture, data center infrastructure, information life cycle; Storage System Environment – storage system environment components, disk drive components, logical components of Host; Data Protection – implementation of RAID, RAID Array components, RAID levels, and performance comparisons.

UNIT II : DAS, SCSI, AND STORAGE NETWORKING

Direct Addressed Storage – Type of DAS, benefits and limitations, Disk Drive Interfaces, Parallel SCSI; Storage Area Networks – evolution, components of SAN, Fibre Channel(FC) connectivity, FC architecture, FC Topologies; Network Attached Storage – Benefits of NAS, components of NAS, protocols, i/o operations.

UNIT III : IP SAN, CAS AND STORAGE VIRTUALIZATION

IP SAN-introduction, components of iSCSI, FCIP; Content Addressed Storage(CAS) – fixed content and archives, types of archives, CAS Architecture; Storage Virtualization – forms of virtualization, taxonomy, Storage Virtualization Challenges, types of storage virtualization.

UNIT IV : BUSINESS CONTINUITY

Introduction - Information Availability, BC terminology, BC planning lifecycle, Business impact analysis- Backup and recovery – purpose and considerations, topology , technologies; local replication - Uses of Local Replicas, Data Consistency, Replication Technologies.

UNIT V : STORAGE SECURITY AND MANAGEMENT

Storage Security - Storage security framework, Risk Triad, Storage security domains, security implementations in storage Networking; Managing the Storage Infrastructure - Monitoring the Storage Infrastructure, Storage Management Activities, Storage Infrastructure Management Challenges.

REFERENCE BOOKS:

1. EMC Corporation, Information Storage and Management, Wiley India, New Delhi
2. Robert Spalding, Storage Networks: The Complete Reference, Tata McGraw Hill, New Delhi 2003.
3. Meeta Gupta, Storage Area Network Fundamentals, Pearson Education Limited, New Delhi 2002.

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1564	VB .NET	3	0	2	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain in-depth knowledge on .NET frame work
2. To develop business applications using VB .net
3. To understand ADO .Net for database programming.

UNIT I - INTRODUCTION TO VISUAL BASIC .NET FRAME WORK

The Common Type System- The Common Language Specification- The Common Language Runtime -Microsoft Intermediate Language- Metadata- Executable Code- Managed Execution- Side-by-Side Execution- Understanding Assemblies- Assembly- - Strong Names. Introduction to Visual Basic .NET Development environment.

UNIT II - CONTROLS

Writing Your First Program- Working with Toolbox Controls- Controls for Gathering Input- Using Group Boxes and Radio Buttons- Processing Input with List Boxes- Working with Menus, Toolbars, and Dialog Boxes- Adding Access Keys to Menu Commands- Processing Menu Choices- Adding Toolbars with the ToolStrip Control- Using Dialog Box Controls- Event Procedures That Manage Common Dialog Boxes- Assigning Shortcut Keys to Menus.

UNIT III - PROGRAMMING FUNDAMENTALS

Visual Basic Variables and Formulas, and the .NET Framework- Variables- The Dim Statement- Variable to Store Input- Variable for Output- Data Types- Visual Basic Operators- Math Methods in the .NET Framework- Establishing Order of Precedence- Decision Structures- If . . . Then Decision Structures- Logical Operators in Conditional Expressions- Select Case Decision Structures- For . . . Next Loops- Do Loops- The Timer Control

UNIT IV - TRAPPING ERRORS

Debugging Visual Basic Programs- Finding and Correcting Errors Tracking Variables by Using a Watch Window- Immediate and Command Windows- The Try . . . Catch , Finally Statement- The Exception Object- Nested Try ... Catch Blocks- Exit Try Statement- Modules and Procedures -Arrays to Manage Numeric and String Data-Working with Collections

UNIT V - ADO.NET

Database Programming with ADO.NET- Data Presentation Using the Data Grid View Control- Data Grid View- Updating the Original Database.

REFERENCE BOOKS:

1. Jeffrey R.Shaprio, (2002), "Visual Basic .NET The Complete Reference", Mac Graw Hill, (Unit I)
2. Michael Halvorson, (2010), "Visual Basic 2010 Step by Step", Microsoft Press (Unit II, III, IV, V)
3. Harold Davis, (2002), "Visual Basic.NET Programming", Sybex

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1565	C# Programming	3	0	2	5	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To create, compile and run object-oriented C# programs using Visual Studio.
2. To Write and understand C# language constructs syntax and semantics.
3. To develop reusable .NET components via interface realization and standard design patterns.

UNIT I -C# LANGUAGE FUNDAMENTALS

An Overview of C# - Data Types – Literals – Variables - The Scope and Lifetime of variables - Type Conversion and Casting - Type Conversion in expressions – Operators. Program Control Statements - if and switch Statements - for, while, do-while and for each loop - Using break - continue and goto Statements.

UNIT II - OBJECT-ORIENTED CONCEPTS IN C#

Class Fundamentals - Creating objects - Reference variables and assignment and methods Constructors - the new operator – Destructors - the this keyword – Arrays - One dimensional array - Multidimensional arrays - Jagged arrays - Assigning array references - Using the length property - Implicitly typed arrays – for each loop – Strings.

UNIT III - OBJECT-ORIENTED CONCEPTS IN C#

Controlling access to class members - Passing references to methods - Use ref and out parameters - Use a variable number of arguments - Return objects - Method Overloading - Overload Constructors - Object initializes The Main() method – Recursion - understanding static - Static classes -Operator Overloading - Indexers and Properties.

UNIT IV - OBJECT-ORIENTED CONCEPTS IN C#

Inheritance Basis - Member access and inheritance - Constructors and inheritance - inheritance and name hiding - Creating a multilevel hierarchy - Base class references and derived objects - Virtual methods and Overriding - Using Abstract classes - Using sealed to prevent Inheritance. The Object class – Interfaces - Using Interface references - Interface properties - Interface indexers - Interface can be inherited - Name hiding with interface inheritance

UNIT V- I/O INTERFACES

The .NET Standard Interfaces - Structures and Enumerations - Exception Handling - Using I/O - The Stream Classes - Console I/O - FileStream and Byte-Oriented File I/O - Character-Based File I/O - Redirecting the Standard Streams - Reading and Writing Binary data - Random Access Files - Delegates.

REFERENCE BOOKS:

1. Herbert Schildt ,(2009)– C# 3.0 : The Complete Reference - McGraw-Hill
2. Svetlin Navako.et al,(2013)-Fundamentals of Computer Programming.
3. Net 3.5 Programming (2008): Covering .Net Framework, Vb 2008, C#, And Asp.Net 3.5, Black Book (With CD) 1st Edition

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
SPD1566	Leadership And Team Management	0	0	2	2	2

INSTRUCTIONAL OBJECTIVES:

Upon successful completion of this course, learners will be able to:

1. Clearly articulate an understanding of setting vision and mission as a leader.
2. Identify and describe several theories of leadership
3. Learn to have an increased awareness of leadership skills within the context of their daily life.
4. Acquire thorough knowledge and understanding of multiple facts of team management

UNIT I LEADERSHIP

Attributes – Styles – Theories of Effective Leadership – charismatic leader, transformational leader.

UNIT II FACTORS INFLUENCING LEADERSHIP BEHAVIOUR I

Personality, types, theories, Perception, factors – Learning Styles – theories.

UNIT III FACTORS INFLUENCING LEADERSHIP BEHAVIOUR II

Emotional Intelligence – skills for Emotional intelligence – Cultural – formation – changing culture, Organizational and Situational Factors.

UNIT IV DESCRIPTION OF TEAMS IN THE ORGANIZATIONS

Organizational context of teams -- structure, culture, support, human resource policies – team topography – purpose of teams, types of teams, size, diversity, extent of use

UNIT V INTRA-TEAM PROCESSES (TASK-RELATED)

Mission, goals, objectives, action planning – intra-team processes (relationship-related): communication, conflict, trust, and decision-making – inter-team processes: conflict, coordination – team effectiveness – measures of productivity, satisfaction, etc.

REFERENCE BOOKS:

1. Chandra Mohan, Leadership and Management, Himalaya Publishing House, 2007
2. Richard Hughes, Robert C. Ginnett, Gordon J Curphy, Leadership: enhancing the lessons of Experience, McGraw-Hill Publication, 6th Edition, 2011
3. Uday Kumar Haldar, Leadership and Team Building, Oxford Publications, 2011

Course Code	Course Title	L	T	P	TOTAL OF LTP	C
BIT1567	Project Work	0	2	6	8	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

- to develop Software Products / Applications on emerging technologies
- Adopt the software development life cycle.
- Improve presentation skills