

KALASALINGAM UNIVERSITY
(KALASALINGAM ACADEMY OF RESEARCH AND EDUCATION)
(Under Section 3 of the UGC Act 1956)
Anand Nagar, Krishnankoil-626126
Srivilliputtur(via); Virudhunagar(Dt.), Tamil Nadu, INDIA
(www.kalasalingam.ac.in)



B.Sc(Information Technology)
(Bachelor of Science)
CURRICULUM AND SYLLABUS - 2014

Department of Computer Applications
B.Sc(Information Technology)

I Semester

Subject Code	Subjects	L	T	P	C
	PART - I				
BAE111	Tamil	3	0	0	3
	PART – II				
BAE112	Prose , Poetry, Fiction, Grammar, Vocabulary, Spoken English and Composition	3	0	0	3
	PART-III				
BSI101	Mathematics for IT	3	1	0	4
BSI102	Problem Solving in C	3	1	0	4
BSI103	Computer Architecture	3	0	0	3
BSI181	PC Software Laboratory	0	0	3	2
BSI182	C Programming Laboratory	0	0	3	2
	TOTAL	15	2	6	21

II Semester

Subject Code	Subjects	L	T	P	C
	PART - I				
BAE121	Tamil	3	0	0	3
	PART – II				
BAE122	Prose , Poetry, Fiction, Grammar, Vocabulary, Spoken English and Composition	3	0	0	3
	PART-III				
BSI201	C++ Programming	3	1	0	4
BSI202	Information Technology	3	0	0	3
BSI203	Data Structures and Algorithms	3	1	0	4
BSI281	C++ Laboratory	0	0	3	2
BSI282	Data Structures Laboratory	0	0	3	2
BSI283	Communicative English Laboratory	0	0	3	2
	TOTAL	15	2	9	23

**SECOND YEAR
III Semester**

Subject Code	Subjects	L	T	P	C
BSI301	Resource Management Techniques	3	1	0	4
BSI302	Java Programming	3	0	0	3
BSI303	Operating Systems	3	1	0	4
BSI304	Database Management Systems	3	1	0	4
CHY102	Environmental Sciences	2	0	0	2
BSI381	Java Programming Laboratory	0	0	3	2
BSI382	RDBMS Laboratory	0	0	3	2
BSI383	Operating Systems Laboratory	0	0	3	2
	TOTAL	14	2	9	23

IV Semester

Subject Code	Subjects	L	T	P	C
BSI401	Unix and Shell Programming	3	1	0	4
BSI402	Computer Networks	3	1	0	4
BSI403	Web Technologies	3	1	0	4
BSI404	Software Engineering	3	1	0	4
BSI481	Unix and Shell Programming Laboratory	0	0	4	2
BSI482	Web Technologies Laboratory	0	0	4	2
	TOTAL	12	4	8	20

THIRD YEAR**V Semester**

Subject Code	Subjects	L	T	P	C
BSI501	Information Security	3	1	0	4
BSI502	Computer Graphics	3	1	0	4
BSI503	Object Oriented Analysis and Design	3	1	0	4
BSI51*	Elective-I	3	0	0	3
BSI581	Graphics Laboratory	0	0	3	2
BSI582	Information Security Laboratory	0	0	3	2
BSI583	Open Source Technologies Laboratory	0	0	3	2
	TOTAL	12	3	9	21

VI Semester

Subject Code	Subjects	L	T	P	C
BSI601	Visual Programming	3	1	0	4
BSI602	Software Testing	3	1	0	4
BSI61*	Elective-II	3	0	0	3
BSI681	Visual Programming Laboratory	0	0	3	2
BSI682	Software Testing Laboratory	0	0	3	2
BSI698	Project Work	0	0	8	6
	TOTAL	9	2	14	21

ELECTIVES
FIFTH SEMESTER

Subject Code	Subjects	L	T	P	C
BSI511	Client Server Computing	3	-	-	3
BSI512	Bio-Informatics	3	-	-	3
BSI513	Neural Networks	3	-	-	3

SIXTH SEMESTER

Subject Code	Subjects	L	T	P	C
BSI611	Cloud Computing	3	-	-	3
BSI612	E-Business	3	-	-	3
BSI613	Data Mining and Data Warehousing	3	-	-	3

Consolidated CGPA Credits

Semester	Credits
I – Semester	21
II – Semester	23
III – Semester	23
IV – Semester	20
V – Semester	21
VI – Semester	21
Total Credit	129

**FIRST YEAR
SEMESTER-I**

BAE111	TAMIL	L	T	P	C
		3	0	0	3

ghlj;jpl;l;jpd;; Fw;pf;Nfhs;;

- khzth;fsplk; th;rp;Fk; gof;fj;ij Vw;gLj;Jtjd; %yk; rpwe;j khzth;fis cUthf;fyhk;
- nkhopj;jpwidf; fw;Fk; NghJ khzth; ve;jr; nrhy;iy vq;F gad;gLj;j Ntz;Lk; vd;w Mw;wYk; Vw;gLfpwJ
- ,yf;fzk; fw;gpf;Fk; nghOJ gioa kuGfis kPwhky; Gjpa cj;jpfigs; gad;gLj;jp Mh;tj;ijj; J}z;lyhk;
- ,yf;fpa czh;it kdjpy; tpjig;gJ fUj;Jg; ghpkhw;wj;jpw;Fr; rhjfkf mikfpwJ.

ghlj;jpl;l;jpd;; ntspg;ghL:

- CO 1. jkpo; GJf;ftpij gilg;Gfis mwpKfg;gLj;Jjy; (Ghpjy;)
- CO 2. GJf;ftpij gilg;ghsh;fs; mth;jk; gilg;Gfs; (Ghpjy;)
- CO 3. GJf;ftpij; \$Wfs; ghl;gFjp ftpijfs; (nghUj;jpg; ghh;j;jy;)
- CO 4. jkpo;r; rpWfij tuyhW (Ghpjy;)
- CO 5. gilg;G cj;jpfs; Fwpg;gplj;jf;f gilg;Gfs; (Ghpjy;)
- CO6. ghl;gFjp rpWfijfSk; ,yf;fzq;fSk; (epidt+l;ly;)
- CO7. mbg;gil kw;Wk; ghl;gFjp ,yf;fzk; (cUthf;Fjy;)

SEMESTER I	Part I	Paper – I	Code :BAE 111	Periods 6 / Credits: 3
Kjy; gUtk; : ,f;fhy ftpijAk; ehlfKk;				
myF – I	:	kuGf; ftpij – ghujpahh;> ghujpjhrd;> Rujh		
myF – II	:	ehl;Lg;Gwghly;fs;		
myF – III	:	GJf;ftpij (20-Mk; E}w;whz;L etPd ftpQh;fs;)		

ehlfk; - itifapy; nts;sk; tUk;.
myF – IV : ,yf;fzk;
myF –V : ,yf;fpa tuyhWk; gad;ghl;Lj; jkpOk;
kh.tujuh\$;d; jkpH; ,yf;fpa tuyhW rhfpj;a mflhkp 2001.
nrJgjp. itfiuapy; bts;sk;tUk;. ghit gjpg;gfk; 2007.

BAE112	PROSE, POETRY, FICTION, GRAMMAR, VOCABULARY, SPOKEN ENGLISH AND COMPOSITION	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To help the learners to have good critical ability
- To help the learner to prepare short speeches and deliver them effectively
- To help the learners to actively participate in story writing
- To help the learners to have fluency in English

COURSE OUTCOMES

On successful completion of this course, the students will be able to

1. Know more about Mahatma Gandhi, Mother Teresa, Martin Luther King
2. Describe Daffodils, beauty of Byron's Maid, painful account of apple- pickers
3. Apply the concept of the stories to the present cult
4. Apply the concept of the stories to the present cult
5. Understand the basic Grammar, and Spoken English
6. Ability to write composition, letter and vocabulary
7. Gain vocabulary through reading
8. Acquire fluency in English language

PROSE

V.S.Srinivasa Sastri -- Mahatma Gandhi
 John Frazer -- Mother Terasa
 R.N.Roy -- Martin Luther King

POETRY

Wordsworth -- "Daffodils"
 Byron -- "She Walks in Beauty"
 Robert Frost -- "After Apple-picking"

FICTION: SHORT STORIES

O. Henry	-- "Gift of the Magi"
Chekhov	-- "The Bet"
Rabindranath Tagore	-- "The Postmaster"

GRAMMAR AND SPOKEN ENGLISH

- Noun
- Pronouns
- Possessive forms
- Articles & Nouns
- Demonstratives
- Some, any, no etc.

(Response in one or two sentences)

Greeting a person; Introducing oneself; Inviting somebody to attend a function; Expressing inability to attend; Requesting; Seeking permission; Refusing permission; Asking for advice; Remembering something; Expressing sympathy; Reminding others; Congratulating; Complaining; Apologizing; Making suggestions; Warning; Asking for information/direction; Expressing annoyance; Encouraging others; Expressing possibility/impossibility; Starting a conversation with a stranger; Ending a conversation; Asking for someone's opinion; Expressing happiness; Expressing something unpleasant; Expressing gratitude.

COMPOSITION AND VOCABULARY

Composition

- (1) Reading comprehension: 8 questions testing skills of locating direct information, associative comprehension, overall understanding, drawing inferences, evaluative comprehension and aspects of grammar and vocabulary.
- (2) Arranging jumbled sentences in a chronological order or a coherent paragraph.
- (3) Letter Writing (Personal letters).

Vocabulary

One Word Substitutes:

alimony, amateur, amnesty, anaesthesia, anarchist, anatomy, anonymous, archive, atheist, autobiography, cannibal, carcinogen, cardiologist, carnivorous, centenarian, contemporary, connoisseur, cosmopolitan, crew, detective, (21 – 40) emigrant, epitaph, extempore, fauna, feminist, fleet, flora, forgery, gymnasium, gynaecologist, herbivorous, hypocrisy, incorrigible, kleptomania, lexicographer, manuscript, mercenary, misanthrope, mortuary, novice, (41 – 60) obituary, omniscient, ophthalmologist, optimist, omnipotent, orphan, panacea, parasite,

pedestrian, pessimist, philanthropy philatelist, polygamy, posthumous, post-mortem, secular, somnambulist, theology, unanimous, utopia.

BOOKS PRESCRIBED:

Jegadisan, S. **Portraits in Prose**. Orient Black Swan, Chennai: 2009.

Sadanand Kamalesh. & Punitha, Susheela. **Spoken English: A Foundation Course**. Part 2 Orient Black Swan, New Delhi, 2011

BSI101	MATHEMATICS FOR IT	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

1. To familiarize the students with the concept and techniques of propositional logic and equivalences and their application to logic theory.
2. To study the Graph and Graph modules.
3. To grasp the concepts in lattices as algebraic system.

COURSE OUTCOME

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

1. Explain and illustrate the concept of proposition disjunction, conjunction, and conditional statement and their use in solving problems.
2. Explain and illustrate the concept of mathematical induction and its use in solving problems.
3. Demonstrate the concept of graphs and graph models, marginal and conditional probability distribution involving two random variables.
4. Explain and illustrate algebraic systems, semigroups, monoids and homomorphism.
5. Understand the concept of lattices and special type of Boolean algebra.

UNIT- I

Propositional Logic – Propositional equivalences-Predicates and quantifiers-Nested Quantifiers-Rules of inference-introduction to Proofs-Proof Methods and strategy

UNIT- II

Mathematical inductions-Strong induction and well ordering-.The basics of counting-The pigeonhole principle –Permutations and combinations-Recurrence relations Solving Linear recurrence relations-generating functions-inclusion and exclusion and applications.

UNIT -III

Graphs and graph models-Graph terminology and special types of graphs-Representing graphs and graph isomorphism -connectivity-Euler and Hamilton paths

UNIT -IV

Algebraic systems-Semi groups and monoids-Groups-Subgroups and Homomorphisms Cosets and Lagrange's theorem- Ring & Fields (Definitions and examples)

UNIT -V

Partial ordering-Posets-Lattices as Posets- Properties of lattices-Lattices as Algebraic systems –Sub lattices –direct product and Homomorphism-Some Special lattices Boolean Algebra

TEXT BOOKS:

- 1.Kenneth H.Rosen, "Discrete Mathematics and its Applications",Special Indian edition,Tata McGraw-Hill Pub. Co. Ltd., New Delhi,2011.
2. Trembly J.P and Manohar R, "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw–Hill Pub. Co. Ltd, New Delhi, 30th edition 2007.

REFERENCES:

1. Ralph. P. Grimaldi, "Discrete and Combinatorial Mathematics: An Applied Introduction", Fourth Edition, Pearson Education Asia, Delhi, 2009.
2. Thomas Koshy, "Discrete Mathematics with Applications", Elsevier Publications, (2006).

BSI102	PROBLEM SOLVING IN C	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- This course is designed to provide a comprehensive study of the C programming language. It stresses the strengths of C, which provide students with the means of writing efficient, maintainable, and portable code. The nature of C language is emphasized in the wide variety of examples and applications.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Understand the basic terminology used in computer programming
2. Write, compile and debug programs in C language.
3. Use different data types in a computer program.
4. Design programs involving decision structures, loops and functions.

5. Explain the difference between call by value and call by reference
6. Understand the dynamics of memory by the use of pointers and Structures.
7. Use different data structures and create/update basic data files.

UNIT-I

History of C - Characteristics of C - C Program Structure - Data Types - Variables and Constants - Operators - Conditional Statements - Looping and Iteration

UNIT-II

Single Dimensional Array - Multi Dimensional Array - Types of functions - Functions and Arrays - String Functions - Recursive Functions

UNIT-III

Basics, Structures and functions - Arrays of structures - Pointers to structures - Self referential structures - Typedef - Union - Bitfields - Enum Data Types

UNIT-IV

Introduction - Pointer Types - Pointers to Strings - Pointers to Array - Pointers to Structure Pointers and Dynamic Allocation of Memory - Pointers to function.

UNIT V

File management and Console input and output – Functions for file management - Standard I/o, Formatted output - Formatted input - File access - Error handling

TEXT BOOK:

1. Herbert Schildt, The Complete Reference C, 4th Edition, Tata Mc - Graw Hill, 2000.

REFERENCES:

1. Byron C Gottfried, Programming with C, Schaums' outline series, 2nd Edition, Tata Mc - Graw Hill, 2006.
2. Brian Kernighan, W., Dennis Ritchie, M., The C Programming Language, 2nd Edition, Prentice Hall of India Pvt. Ltd., 2008

BSI103	COMPUTER ARCHITECTURE	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

Understand the architecture of a modern computer with its various processing units. Also the performance measurement of the computer system. In addition to this the memory management system of computer.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Understand the architecture of modern computer.
2. Understand different instruction types.
3. Calculate the effective address of an operand by addressing modes
4. Understand that how computer stores positive and negative numbers.
5. Understand the concept of Storing data and Program in Memory
6. Gain knowledge about Cache memory and its importance and Secondary storage organization
7. Understand how cache mapping occurs in computer and can solve various problems related to this.

UNIT-I

Digital and analog computers, Evolution and classification of computers, Functional Units and Components in Computer Organization - Block diagram, Memory addressing and processing of a CPU, Word length of a computer, RISC and CISC processors.

UNIT-II

Number systems – Decimal Number system, Binary number system, octal and Hexadecimal number system, 1's & 2's complement, Representation of Positive and Negative Numbers, Binary Fixed- Point and Floating Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow.

Logic Gates - AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates – Flip-flops – Registers and Shift Registers.

UNIT-III

Memory organization - Storing data and Program in Memory, Memory Hierarchy in a Computer - Internal Organization of Semiconductor Main Memory Chips - Semiconductor Memory RAM and ROM – DMA - Secondary Storage Memory, Magnetic Memories, Hard Disk, Optical Disks and CD Memories.

UNIT-IV

CPU organization – Instructions – Addressing modes – Instruction cycle.

UNIT-IV

I/O organization – I/O devices – Serial data transfer – I/O processor – Arithmetic processor.

TEXT BOOK

1. B. Ram, Computer Fundamentals: Architecture and Organization, 3rd edition, New Age International Publishers, New delhi.

REFERENCE(s)

1. W. Stallings, Computer Organization and Architecture, 6th edition, PHI, 2003
2. C. Hamacher, Z. Vranesic, S.Zaky, Computer Organization, 5th edition, Mcgraw Hill, 2002.

3. Morris Mano, Digital logic and Computer design, 3rd edition, Pearson Education, Prentice hall.

BSI181	PC SOFTWARE LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVE

- To learn about computer components, System configuration and utilities.
- To understand the basic concepts of Application software.
- To gain the detailed knowledge about MS office package and internet concepts.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understand the components of computer.
2. Understand the fundamental concept of configuring the system, utilities
3. Know about the utilities such as disk cleanup, disk fragment etc.,
4. Work on Ms Office package(MS Word 2000, MS Excel 2000, MS PowerPoint 2000)
5. Solve mathematical problems and database problems with the help of computer
6. Get good understanding of internet(sending and reading E-Mails, sending letters through attachments etc.,)
7. Work with files and folders.

1. 1. WINDOWS OPERATING SYSTEM

Understanding

- a. Windows elements - desktop, icons, taskbars.
- b. Configuring the system - Checking the system configuration, Date/time, Disk partitions, Add/remove programs
- c. Utilities – disk cleanup, disk defragmenter etc...
- d. Working with files and folders - Create, rename, edit, move, delete etc...

2. MS-OFFICE

2.1 MS-WORD

1. Text Manipulations
2. Usage of Numbering, Bullets, Tools and Headers
3. Usage of Spell Check and Find and Replace
4. Text Formatting
5. Picture Insertion and Alignment
6. Creation of Documents Using Templates`
7. Mail Merge
8. Copying Text and Picture From Excel
9. Creation of Tables, Formatting Tables

10. Splitting the Screen
11. Opening Multiple Documents, Inserting Symbols in Documents

2.2 MS-EXCEL

1. Creation of Worksheet and Entering Information
2. Aligning, Editing Data in Cells
3. Date, Time, Statistical, Mathematical, Financial Functions
4. Changing of Column Width and Row Height
5. Moving, copying, Inserting and Deleting Rows and Columns
6. Formatting Numbers and Other Numeric Formats
7. Drawing Borders around Cells
8. Creation of Charts

2.3 MS -POWER POINT

1. Creating, saving, closing presentation
2. Adding Headers and footers
3. Changing slide layout
4. Working fonts and bullets
5. Inserting and working with Clip art
6. Applying Transition and animation effects

3. INTERNET BASICS

1. Creating an email-id.
2. Composing, sending and forwarding a mail.
3. Downloading the mail attachment.
4. Sending a mail using cc and bcc options.
5. Searching using search engine

BSI182	C PROGRAMMING LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVES

- To write, compile and debug programs in C language.
- To formulate problems and implement algorithms in C.
- To effectively choose programming components that efficiently solve computing problems in real-world.

COURSE OUTCOME

Upon successful completion of this lab Course, student will be able to

1. Understand the basic concept of C Programming, and its different modules.
2. Acquire knowledge about the basic concept of writing a program.
3. Explain the role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
4. Use the conditional expressions and looping statements to solve problems associated with conditions and repetitions.
5. Demonstrate the role of Functions involving the idea of modularity.
6. Understand the concept of Array and pointers dealing with memory management.
7. Use the structures and unions through which derived data types can be formed.

8. Understand the file handling for permanent storage of data.

PROGRAMS

1. To demonstrate use of data types, simple operators (expressions)
2. To demonstrate decision making statements (if and if-else, nested structures)
3. To demonstrate decision making statements (switch case)
4. To demonstrate use of simple loops
5. To demonstrate use of nested loops
6. To demonstrate menu driven programs and use of standard library functions.
7. To demonstrate writing C programs in modular way (use of user defined functions)
8. To demonstrate recursive functions.
9. To demonstrate use of arrays (1-d arrays) and functions
10. To demonstrate use of multidimensional array(2-d arrays) and functions
11. To demonstrate use of pointers
12. To demonstrate concept of strings (strings and pointers)
13. To demonstrate array of strings.
14. To demonstrate structures (using array and functions)
15. To demonstrate nested structures and Unions
16. To demonstrate file handling (text files)

SEMESTER-II

BAE121	TAMIL	L	T	P	C
		3	0	0	3

ghlj;jpd; Fwpf;Nfhs;:

- gf;jp ,af;fk; Njhd;wpa tuyhw;iwAk;> mJ jkpofj;jpy; Vw;gLj;jpa jhf;fj;ijAk; khzthplk; GFj;jy;
- ,iwczh;it Cl;b fw;Nghhpd; cs;s;ij cUFkhW vLj;Jiuf;f Ntz;Lk;
- gf;jpg;ghly;fs; thrf;Fk; NghNj nrhw;ngHuspidAk;> fUj;Jf;fisAk; czh;r;rptbtpy; mik;j;y; rpwg;ghFk;
- gpwiu ey;topg;gLj;Jk; Nehf;fpy; gf;jp ,yf;fpak; gad;gLfpwJ

ghlj;jpd; ntspg;ghL:

CO 1. gf;jp,yf;fpa Njhw;wg; gpd;Gyk; (Ghpjy;)

CO 2. rkaq;fSk; murpaYk; (Ghpjy;)

CO 3. rpw;wpyf;fpaj;jpd; fhyk; (Ghpjy;)

CO 4. rpw;wpyf;fpa tiffs; (epidT+l;ly;)

CO 5. Gjpdk; - tho;tpay; (nghUj;jpg; ghh;j;jy;)

CO 6. nrhy; tiffs; mwpjy; (Ghpjy;)

CO 7. rkak; tsh;j;j jkpo; (epidT+l;ly;)

SEMESTER II	Part I	Paper – II	Code :BAE 121	Periods 6 / Credits: 3
,uz;lhk; gUtk;				
myF – I	:	,yf;fpa ciueilAk; fij ,yf;fpaKk; (11 rpWfijfs;)		
myF – II	:	Mw;wq;fiu Xuk; (ehty;)		
myF – III	:	,yf;fzk; (nrhy;)		
myF – IV	:	,yf;fpa tuyhW gad;ghl;Lj; jkpo;		
myF –V	:	nra;jp> fl;Liu – vOj;Jgapw;rp		
kh.tujuh\$&d;. jkpH; ,yf;fpa tuyhW. rhfpj;a mflhkp 2001.				
uh.nrJgps;is. Mw;w';fiunahuk;. ghit gjpg;gfk; 1977.				

BAE122	PROSE, POETRY, FICTION, GRAMMAR, VOCABULARY, SPOKEN ENGLISH AND COMPOSITION	L	T	P	C
		3	0	0	3

PROSE

D.H.Lawrence -- The Rocking Horse Winner

Anton Chekov -- The Bet

Somerset Maugham -- Princess September

POETRY

William Wordsworth -- "Lucy"

W.B.Yeats -- "The Wild Swans"

D.H.Lawrence -- "The Best of School"

T.S.Eliot -- "To the Indians who Died in Africa"

Philip Larkin -- "That Whitsun"

FICTION – SHORT STORIES

William Somerset Maugham -- The Verger

R.K.Narayan -- An Astrologer's Day

Bhabani Bhattacharya -- Glory at Twilight

GRAMMAR AND SPOKEN ENGLISH**Grammar:**

1. Tenses
2. Active and Passive

Spoken English (Responses in one or two sentences)

Making assertions; Describing persons and objects; Taking a vow; Commenting on situations; Exclamations; Giving yourself time to think; Asking for someone's opinion; Asking about preferences; Asking whether someone knows; Saying you know; Checking if someone has understood; Asking if someone agrees; Asking someone to repeat; Leaving someone for a short time; Asking if someone is able to do something; Saying you are unable to do something; Changing the subject; Avoiding giving an opinion; Ordering food at a restaurant; Talking about weather and season; Asking about

daily activities; Making polite requests using, “*Would (Will) you Please?*”, etc.; Discussing Television Programme.

COMPOSITION & VOCABULARY

- (1) Letter Writing (Official) and Preparation of *curriculum vitae*.
- (2) Developing hints into a story/general essay; Simple topics to be chosen for essay.
- (3) Note making.

Vocabulary

Homophones:

beer – bier; berth – birth; deer – dear; desert – dessert; diseased – deceased; feat – feet; heard – herd; cast – caste; check – cheque; draught – draft; hangar – hanger; hear – here; knight – night; loan – lone; mane – main; Meet – meat; meter – metre; pair – pear; peal – peel; personal – personnel; piece – peace -- peas; pray – prey; root – route; sent -- scent – cent; cite -- site – sight; sow – sew; stationary – stationery; steal – steel; story – storey; wait – weight.

BOOKS PRESCRIBED:

Board of Editors. **Journey through Words**. Orient Longman, Hyderabad: 2007.

Board of Editors. **The Fragrance of Fiction**. Orient Black Swan, Hyderabad: 2011.

BSI201	C++ PROGRAMMING	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- To get a clear understanding of object-oriented concepts.
- To understand object oriented programming through C++.

COURSE OUTCOME

Upon successful completion of this course, Student will be able to

1. Gain the basic knowledge on Object Oriented concepts.
2. Develop applications using Object Oriented Programming Concepts
3. Demonstrate the differences between traditional imperative design and object-oriented design
4. Explain class structures as fundamental, modular building blocks
5. Understand the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable code
6. Write small/medium scale C++ programs with simple graphical user interface
7. Understand the file handling and error handling mechanisms in C++

8. Get knowledge to use strings and Streams in C++
9. Implement features of object oriented programming to solve real world problems

UNIT-I

OOP concept, Procedural vs OOP programming, OOP terminology and features, Tokens, Character set, Keywords, Data-types, Data Types declarations, Constants and variables, expressions, Standard Library and header files. Operator and Expressions: Arithmetic Operator, Increment/Decrement Operator, Relational Operator, Logical Operator and conditional operators, library functions, Logical Expressions, C++ shorthand operators- Enumerated Data Types.

UNIT-II

Flow of control statements: Selection statements, Iteration statement, Jump statement, Construction of loops and implementation, Classes and Objects: Need for Classes, Declaration of Classes, referencing class Members, Scope of class and its members Nested Classes, Functions in a class: Inline Functions, Constant Member functions, Nesting of Member Functions, friend function, Memory allocation of objects, Arrays of objects, Static Class Member -Arrays two dimensional and multidimensional arrays, Arrays of Pointers, Pointers and functions.

UNIT-III

Constructors and Destructor: Declaration, Definition and characteristics, Function Overloading, Inheritance:Need, Different forms of inheritance – Virtual functions, this pointer- Operator Overloading :Overloading Unary Operators, Overloading Binary Operators

UNIT-IV

File Handling: Classes for file stream operations, opening and closing a file, detecting end of file, file modes, file pointers and their manipulations, sequential input and output operations, random access, file operations error handling, command line argument, Exception Handling- try, catch statements, Multiple catch statements.

UNIT-V

Strings and Streams: the string class and functions, stream classes, the ios class, ios format flags, ios state , variables ,the istream and ostream classes, unformatted input functions , unformatted output functions, stream manipulators. Templates and Iterators: function templates, class templates, container classes, subclass templates, passing template classes to template parameters, iterator classes.

TEXT BOOK

1. E Balagurusamy, “Object oriented Programming with C++”, Tata McGraw-Hill Publishing Company, Edition 5 ,June 2011
2. D.Ravichandran, “Programming with C++”, Tata McGraw Hill, Edition 4, 2011.

REFERENCE

- 1.HM Deitel and PJ Deitel “C++ How to Program”, Prentice Hall ,Seventh Edition, 2010
- 2.Herbert Schildt, “The Complete Reference in C++”, Tata McGraw Hill.Fourth Edition, 2003.
- 3.Y.P.Kanetkar, “Let us C++” , BPB publication,2013.
- 4.Bjarne Stroustrup, “The C++ Programming language”, Addison-Wesley, 2013.

BSI202	INFORMATION TECHNOLOGY			L	T	P	C
				3	0	0	3

COURSE OBJECTIVES

- To get a clear understanding of IT in Business
- To understand Network applications

COURSE OUTCOME

Upon successful completion of this course, Student will be able to

1. Know the anatomy of a Computer-Foundations of Modern IT
2. Gain the basic knowledge on Information system and importance of IT
3. Understand the applications programs and network applications
4. Gain knowledge about concepts of programming and programming techniques
5. Acquire knowledge about input and output devices

UNIT – I

An Introduction-Information Systems - Software and Data, IT in Business, Industry, Home, play, Education, Training Entertainment, Arts, Science, Engineering and Maths-Computers in Sliding –GPS types of computers-Anatomy of a Computer-Foundations of Modern IT – CPU-memory-Buses-Communication with Peripherals.

UNIT – II

I/O devices-Inputting text and graphics-pointing devices-Foundations of modern output-Display screens-Printers Foundations of modern output-Display screens-Printers Foundations of Model Storage-storage media-increasing data storage capacities-the smart card.

UNIT – III

S/W Interfaces-Applications Programs-OS document centric computing –s/w issues-network computing-editing documents-word processing-features-formatting documents-desktop publishing-spreadsheet applications-database applications – queries-internet connectives.

UNIT – IV

Network applications-foundation of modern networks-LAN-WAN-links between networks – high bandwidth connections-multimedia-tools of multimedia-delivering multimedia-multimedia on the web-corporate computing-transaction processing-

management control-marketing-advertising, sales, design, production and manufacturing –business on the internet –outside computing careers-keeping up to date.

UNIT –V

Programs – concepts of programming – programming techniques- corporate development-computers and health-viruses-computer crime-cryptography-business issue.
Books for Study and References

TEXT BOOK

1.D. P. Curtin, K. Foley, K. Sen, and C. Morin, Information Technology- The Breaking Wave, TMH ,5th Edition,2002.

REFERENCES

1. Sawyer, Williams and Hutchinson, Using Information Technology – Brief Version, McGraw Hill International edition – 5th Edition - 2002.
2. Alexis Leon & Mathews Leon , Fundamentals of Information Technology, Vikas Publishing House Pvt. Ltd. , 1999.

BSI203	DATA STRUCTURES AND ALGORITHMS	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- The objective of this course is to teach students various data structures and to explain them algorithms for performing various operations on these data structures.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Demonstrate familiarity with major algorithms and data structures.
2. Analyze performance of algorithms and choose the appropriate data structure and algorithm design method for a specified application.
3. Determine which algorithm or data structure to use in different scenarios and be familiar with writing recursive methods.
4. Demonstrate the abstract properties of various data structures such as stacks, queues, lists, trees and graphs and Use various data structures effectively in application programs.
5. Demonstrate various sorting algorithms, including bubble sort, insertion sort, selection sort, heap sort and quick sort.
6. Understand and apply fundamental algorithmic problems including Tree traversals, Graph traversals, and shortest paths.
7. Gain knowledge about Hashing and Collisions and B- Trees.

UNIT – I

Algorithmic notation – Programming principles – Creating programs- Analyzing programs -array –Representation of Arrays- One dimensional array- Multidimensional array- pointer arrays- Stack and Queue – Fundamentals of stack and Queues – Evaluation of Expressions

UNIT II

Linked List: Single Linked List – Doubly Linked List – Circular Linked List- Application of Linked List- Dynamic Storage Management – Generalized List – Garbage Collection And Compaction

UNIT III

Tree Introduction - Binary Tree Representation – Tree Traversal- Threaded binary Tree – AVL Tree– Graphs – Graphs representation –Graph Traversal - Topological Sorting

UNIT –IV

Bubble sort – Insertion Sort – Selection sort – Radix Sort - Shell Sort– Merge sort – Quick Sort – Heap Sort –Linear Search – Binary Search

UNIT V

Hashing – Types of Hashing – Collision Resolution techniques- B- Tree Representation – B tree Operations- B+ Tree Indexing

TEXT BOOKS:

1. Ellis Horowitz ,Fundamentals of Computer Algorithms, Sartaj Sahni, Rajasekaran, 2nd Edition, University Press, 2008.
2. D. Samanta- “Classic Data Structures”- Prentice-Hall of India- Pvt. Ltd.- India 2006.

REFERENCES :

1. Robert Kruse- C.L. Tondo and Bruce Leung- “Data Structures and Program Design in C”- Prentice-Hall of India- Pvt. Ltd.- Third- 2006.
2. Jean Paul Tremblay and Paul G. Sorenson- “An Introduction to Data Structures with Applications”- Tata McGraw-Hill- Third Edition- 2006.
3. Mark Allen Weiss-” Data Structures and Algorithm Analysis in C”- Pearson Education- Second edition- 2006

BSI281	C++ LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVE

- To make the student learn an object oriented way of solving problems.

- To make the student to identify and practice the object-oriented programming concepts and techniques.
- To practice the use of C++ classes and class libraries, modify existing C++ classes.
- To develop C++ classes for simple applications

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Apply object-oriented programming features to program design and implementation
2. Understand object-oriented concepts and how they are supported by C++
3. Understand implementation issues related to object-oriented techniques.
4. Analyze, use, and create functions, classes, to overload operators.
5. Use inheritance and Pointers when creating or using classes and create templates
6. Understand and use Exception handling and file handling mechanism.
7. Write programs that make appropriate use of advanced object-oriented facilities common to many object-oriented languages such as classes, message passing, overloading and inheritance.
8. Design interactive programs with a simple GUI interface using an object-oriented programming language.
9. Choose and apply appropriate advanced object-oriented programming concepts.

PROGRAMS

1. Programs using Control Structures
2. Programs using Functions
3. Programs using Arrays
4. Programs using Inline Functions
5. Programs using Classes
6. Programs using Constructors and Destructors
7. Programs using Friend Functions
8. Programs using Operator Overloading
9. Programs using Inheritance
10. Programs using Virtual Functions
11. Programs using Files
12. Programs using Strings

BSI282	DATA STRUCTURES LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVE

- To develop skills to design and analyze simple linear and non linear data structures

- To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
- To Gain knowledge in practical applications of data structures

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Design and analyze the time and space efficiency of the data structure
2. Capable to identify the appropriate data structure for given problem
3. Get practical knowledge on the application of data structures
4. Implement linked list data structure to solve various problems.
5. Apply graph and tree traverse technique to various applications.
6. Implement Dijkstra's algorithm, Btrees and hash tables.
7. Understand and apply various data structure such as stacks, queues, trees and graphs to solve various computing problems using C-programming language.

PROGRAMS

1. Factorial and Fibonacci series using recursion
2. Strassen's Matrix Multiplication
3. Array implementation of Linear and Binary search
4. Infix to postfix conversion
5. Singly Linked List operations
6. Binary tree traversals
7. Quick sort
8. Find the Shortest Path using Dijkstra's Algorithm – Greedy method
9. Knap sack problem using Dynamic programming
10. Travelling sales man problem and 8 queen's problem using backtracking

BSI283	COMMUNICATIVE ENGLISH LABORATORY	L	T	P	C
		0	0	3	2

- Module-1: (Phonetics Theory & Practice)
- Module-2: (Communicative English-Interactive)
- Module-3: (Situational Conversation-Listen)
- Module-4: (Situational Conversation-Listen)
- Module-5: (Situational Conversation-Listen)
- Module-6: (Global Communication-Listen)
- Module-7: (Global Communication-Listen)
- Module-8: (Monologues with exercise)
- Module-9: (Comprehension)
- Module-10: (Biographies)
- Module-11: (Errors in Spoken English)
- Module-12: (Essential English Grammar)
- Module-13: (Vocabulary)

- Module-14: (Learning Through Cartoons)
- Module-15: (Learning Through Fun)
- Module-16: (Learning Through Games)
- Module-17: (Learning Through Music)
- Module-18: (Learning Through Stories)
- Module-19: (Learning Through Situations)
- Module-20: (Learning Through Activities)
- Module-21: (Learning Through Discussion)
- Module-22: (Learning Through Interview)

SECOND YEAR
SEMESTER-III

BSI301	RESOURCE MANAGEMENT TECHNIQUES	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- The goal of this course is to teach you to formulate, analyze, and solve mathematical models that represent real-world problems.
- To learn linear programming, network flow problems, integer programs, nonlinear programs, dynamic programming and queueing models.

COURSE OUTCOMES

Upon completion of this course, Student will be able to:

1. Formulate a real-world problem as a mathematical programming model
2. Understand the theoretical workings of the simple method for linear programming and perform iterations of it by hand
3. Understand the relationship between a linear program and its dual, including strong duality and complementary slackness
4. Perform sensitivity analysis to determine the direction and magnitude of change of a model's optimal solution as the data change
5. Solve specialized linear programming problems like the transportation and assignment problems
6. Solve network models like the shortest path, minimum spanning tree, and maximum flow problems
7. Understand the applications of, basic methods for, and challenges in integer programming
8. Understand how to model and solve problems using dynamic programming
9. Model a dynamic system as a queuing model and compute important performance measures

UNIT-I

Concept -- Meaning and Definition – Development of OR – Characteristics of OR – Scope & Objectives of OR – Phases of OR – Techniques of OR – OR and Modern Business Management- Limitations of OR

UNIT-II

Meaning & Objective of LP – Applications of LP – Formulation of Mathematical Model to a LPP – Objective function – Constraints – Solution to LPP by Graphical method, simplex method and Mi technique – Advantages and Disadvantages of LP.

UNIT-III

Meaning and Objectives – Network Techniques – Managerial applications of Network Techniques – PERT & CPM – Network diagram – activity – Event – Dummy Activity – Construction of Network diagram – Numbering of events – Activity & Event times – Float & Slack – Steps in the application of CPM – Critical activity – Finding of critical path & Estimated Duration – Time estimates in PERT – Steps involved in PERT calculations – Difference between PERT & CPM (only simple problems are expected – Crashing of activity timing not expected)

UNIT-IV

Solving Assignment Problem- Travelling Salesman Model – Maxima & Minima Method – Hungarian Method Sequential decision making – sequencing problems - Queuing Models.

UNIT-V

Structure of Transportation problem – solution for Transportation problem – North West Corner Method (NWCM) – Least Cost Method (LCM) – Vogel's Approximation method(VOM).

TEXT BOOKS:

1. Kanti Swarup, P.k. Gupta and Manmohan, Operations Research –, Sultan Chand & Sons ,New Delhi,2004
2. Paneerselvam R., Operations Research, 4th edition, Prentice Hall of India, New Delhi, 2003.

REFERENCES

1. Hamdy A Taha, Introduction to Operations Research, 7th edition, Prentice Hall India, New Delhi, 2004.
2. Gupta P.K, Man Mohan, Problem in Operations Research: Methods and Solutions, 9th edition, Sultan Chand and Sons, New Delhi, 2003.
3. Vohra N.D., Quantitative Techniques in Management, 2nd edition, Tata McGraw Hill, New Delhi, 2001.
4. Kalavathy S., Operations Research, 2nd edition, Vikas Publishing House New Delhi, 2004.

BSI302	JAVA PROGRAMMING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE

- To introduce students to the Java programming language.
- To create Java programs that leverage the object-oriented features of the Java language, such as encapsulation, inheritance and polymorphism; use data types, arrays and other data collections;

- To implement I/O functionality to read from and write to text files.

COURSE OUTCOMES

Upon successful completion of this course, student will be able to

1. Understanding of the principles and practice of object oriented analysis and design in the construction of robust, maintainable programs which satisfy their requirements;
2. Implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.
3. Demonstrate the principles of object oriented programming;
4. Use simple data structures like arrays in a Java program.
5. Understand the concept of package, interface, multithreading and File handling in java.
6. Use members of classes found in the Java API (such as the Math class).
7. Employ various types of selection constructs in a Java program.
8. Employ a hierarchy of Java classes to provide a solution to a given set of requirements.

UNIT-I

Introduction-Object Oriented paradigm-Basic concepts of object oriented programming-Benefits of OOP-Applications of OOP- Java Features- How Java differs from C and C++ – Java and Internet – Java and www – simple Java program –Structure – Java Tokens – Statements

UNIT-II

Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: if, if...else, nested if, switch,? operator - Decision Making and Looping: while, do, for –Jumps in Loops - Labeled Loops – Classes, Objects and Methods..

UNIT-III

Arrays- Introduction-One dimensional arrays –Two dimensional arrays-Strings-Vectors-Enumerated types-Interfaces- Defining, Extending and implementing interfaces-Packages –JAVA API packages- creating packages-Accessing packages-Adding a class to a package-Hiding classes

UNIT-IV

Multithreaded Programming-creating threads- extending thread class- stopping and blocking a thread-life cycle of a thread-synchronization- Implementing a Runnable

interface- Inter thread communication-Managing Errors and Exceptions – Applet Programming – Graphics Programming.

UNIT-V

Managing Input/output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.

TEXT BOOKS:

1. E. Balagurusamy, PROGRAMMING WITH JAVA – A PRIMER, Tata McGraw-Hill, 4th Edition, 2010.

REFERNCES:

1. The Complete Reference JAVA 2 - Patrick Naughton & Hebert Schildt, 3rd ed, TMH
2. Programming with JAVA – John R. Hubbard, 2nd Edition, TMH.
3. JAVA and Object-Oriented Programming Paradigm – Debasish Jana, 2005, PHI.

BSI303	OPERATING SYSTEMS	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- The course familiarizes the student with basic knowledge of computer operating systems. The objective of the course is to provide basic knowledge of computer operating system structures and functioning.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
2. Understand the difference between process & thread, issues of scheduling of user level processes / threads and their issues & use of locks, semaphores, monitors for synchronizing multiprogramming with multithreaded systems and implement them in multithreaded programs.
3. Gain knowledge about the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system.
4. Demonstrate the design and management concepts along with issues and challenges of main memory, virtual memory and file system.
5. Understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimize these problems.

UNIT – I

Operating System Objectives and functions-The Evolution of Operating Systems-Serial Processing-Simple batch Systems-Multi Programmed batch Systems-Time Sharing Systems.

UNIT – II

Definition of Process-Process States-Process Control Block-Operations on Process-Process Communication-Communication in Client-server System- Basic concepts of threads - Concurrency-Principles of Concurrency-Mutual exclusion - Semaphores – Messages – Deadlock - Deadlock Prevention - Deadlock detection - deadlock avoidance

UNIT – III

Memory Management-Address binding-Logical Vs Physical address space-Dynamic Loading-Dynamic Linking and Shared Libraries-Overlays-Swapping-Contiguous Memory allocation-Paging-Segmentation-Virtual memory-Demand paging-Page replacement-Thrashing.

UNIT – IV

CPU Scheduling - Scheduling Criteria-Scheduling algorithms – FCFS, SJF, Priority, RR, Multilevel, Feedback Queue - Process synchronization-The Critical Section Problem-Synchronization Hardware-Classical Problems of synchronization, File and Database System-File System-Functions of organization-Allocation and Free space management.

UNIT- V

Modern Operating Systems-Architecture and Features, Case Studies-Linux –Windows network OS - Windows XP (Design principles and components only)

TEXT BOOK:

1. Silberschatz, Galvin, Gagne “Operating System Concepts “8th Edition-John Willey & Sons INC ,2009

REFERENCES:

1. William Stallings “Operating Systems, Internals and Design Principles”,7th Edition-PHI Publications New Delhi
2. Tanenbaum A.S., “Operating System Design & Implementation”, Practice Hall NJ, 2005

BSI304	DATABASE MANAGEMENT SYSTEMS	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- To educate students with fundamental concepts of Data Base Management System, Data Models, Different Data Base Languages.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Analyze Database design methodology.
2. Acquire knowledge in fundamentals of Data Base Management System.
3. Analyze the difference between traditional file system and DBMS.
4. Handle with different Data Base languages.
5. Draw various data models for Data Base and Write queries mathematically.
6. Design data base and normalize data and Understand how query are being processed and executed.
7. Deal with online transactions and control Concurrency.

Understand types of Data Base failures and Recovery **UNIT – I**

Introduction – Database- Database management system- Characteristics of the database approach- Role of Database administrators- Role of Database Designers- End Users- Categories of data models- Schemas- Instances- - DBMS Architecture and Data Independence – The Three schema architecture- DBMS Languages and Interfaces- Classifications of Database Management Systems.

UNIT II

Data Modeling Using Entity-Relationship Model -Using High Level Conceptual Data Models for Database Design- Example Database applications. Entity types- Entity Sets- Attributes and Keys. Relationships- Relationship types- Roles and Structural constraints. Weak Entity Types and Drawing E- R Diagrams

UNIT II

Database Design -Functional dependencies and Normalization for Relational Databases - Normalization concepts- First Normal Form- Second Normal Form- Third normal forms

UNIT IV

SQL data definition and data types- specifying constraints in SQL- schema change statements- Basic queries- INSERT- DELETE and UPDATE statements in SQL- Views – Concept of a view in SQL.

UNIT - V

Transaction Processing Concepts and Concurrency Control Techniques -Transaction and System concepts – Desirable properties of Transactions – Schedules and Recoverability. Lock-Based Protocols – Locks- Granting of Locks- and Two phase locking protocol.

TEXT BOOK :

- 1.Elmasri & Navathe, Fundamentals of Database Systems,5th Edition, Addison Wesley 2008.

REFERENCES :

1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, 6th

Edition, McGraw Hill, 2011.

2. Patrick O'Neil, Elizabeth O'Neil, Database Principles Programming and Performance, 2nd Edition, Margon Kaufmann Publishers India, 2001

CHY102	ENVIRONMENTAL SCIENCE	L	T	P	C
		2	0	0	2

COURSE OBJECTIVES

- Creating awareness among engineering students about the importance of environment, the effect of technology on the environment and ecological balance is the prime aim of the course.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Know the importance of environmental studies and methods of conservation of natural resources.
2. Describe the structure and function of an ecosystem.
3. Identify the values and conservation of bio-diversity.
4. Explain the causes, effects and control measures of various types of pollutions.
5. Select the appropriate methods for waste management.
6. Get knowledge about various disaster management methods
7. Recall social issues and legal provision.

UNIT- I Nature of Environmental Studies and Natural Resources:

Definition, scope, and importance of environmental sciences -Need for public awareness- Natural resources: Forest resources, Water resources, Mineral resources, Energy resources, Land resources - Role of an individual in conservation of natural resources.

UNIT-II Ecosystem and Biodiversity:

Concept of an ecosystem - Structure and function of an ecosystem - Energy flow in the ecosystem - Food chains, food webs and ecological pyramids - Ecological succession - Biodiversity – Definition, value of biodiversity- Hot spots of biodiversity - Threats to biodiversity - Endangered and endemic species of India - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

UNIT-III Environmental Pollution:

Types, sources, consequences and control measures of water pollution, ecological and biochemical aspects of water pollution - Sources, effects and control measures of Air pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution and

Nuclear pollution - Climate change, global warming, acid rain, Tropospheric chemistry of zone-ozone layer depletion, nuclear accidents and holocaust- Role of an individual in prevention of pollution.

Unit-IV: Management of Environmental Pollution:

Causes, effects, treatments methods and control measures of solid waste, municipal waste, hazardous waste and biomedical waste - Waste minimization techniques - Cleaner Technology- Green Chemistry- Principles and its role in controlling environmental pollution-Disaster management: floods, earthquake, cyclone, landslides and Tsunami.

Unit-V: Social Issues and the Environment:

Water conservation, rain water harvesting- Resettlement and rehabilitation of people- Wasteland reclamation - Environmental impact assessment- Precautionary and polluters pay principle- environment protection act – air (prevention and control of pollution) act – water (prevention and control of pollution) act – Issues involved in enforcement of environmental legislation - Population explosion – Family Welfare Programmes - Environment and human health - Human Rights - Women and Child Welfare

Text Books:

1. Sawyer C. N, McCarty P. L, and Parkin G. F., Chemistry for Environmental Engineering, McGraw-Hill, Inc., New York, 1994.
2. Dhameja, S. K., Environmental engineering and Management, S. K. Kataria and sons, New Delhi, 1st edition 2004.
3. Gilbert M.Masters, “Introduction to Environmental Engineering and Science”, pearson education Pvt., Ltd., second edition, ISBN 81-297-0277-0, 2004.
4. Townsend C., Harper J and Michael Begon, “Essentials of Ecology”, Blackwell science.

Reference Books:

1. Miller T.G. Jr., Environmental science, wadsworth Publishing Co. USA, 2nd edition 2004.
2. Bharucha erach, “The Biodiversity of India”, mapin publishing Pvt. Ltd., Ahmedabad India,
3. Trivedi R.K., “Handbook of Environmental Laws”, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro media.
4. Cunningham, W.P.Cooper, T.H.Gorhani, “Environmental Encyclopedia”, Jaico Publ., House, Mumbai, 2001.
5. Wager K.D., “Environmental Management”, W.B. Saunders Co., Philadelphia, USA, 1998.
6. Trivedi R.K. and P.K. Goel, “Introduction to air pollution”, techno-science publications.

BSI381	JAVA PROGRAMMING LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVES

1. To be knowledgeable enough about basic Java language syntax and semantics to be able to successfully read and write Java computer programs;
2. To have obtained experience designing, implementing, testing, and debugging graphical user interfaces that respond to user events using Java;

COURSE OUTCOME

Upon successful completion of this course, students will be able to

Upon successful completion of this course, students will be able to

1. Understand programming language concepts, particularly Java and object-oriented concepts.
2. Write, debug, and document well-structured Java applications
3. Implement Java classes from specifications and effectively create and use objects from predefined class libraries
4. Understand the behavior of primitive data types, object references, and arrays
5. Apply decision and iteration control structures to implement algorithms
6. Write simple recursive algorithms
7. Implement interfaces, inheritance, and polymorphism as programming techniques and apply exceptions handling

PROGRAMS

1. Programs using classes and methods
2. Programs using one dimensional and two dimensional arrays
3. Programs using Strings
4. Programs using vectors
5. Programs using Inheritance
6. Generate the program using interfaces
7. Programs to implement the exception handling mechanism
8. Programs to implement packages.
9. Programs using multithreading
10. Programs using Applets
11. Programs using Files

BSI382	RDBMS LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVES

- To educate students with fundamental concepts of Data Base Design, Data Models, Different Data Base Languages (SQL/Oracle).
- To analyze Data Base design methodology and DB connectivity.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Gain knowledge about SQL Fundamentals.
2. Perform Unary & Binary table operations.
3. Handle with different Data Base languages.
4. Create Table View, Log & Triggers.
5. Handle online Transactions.
6. Create Database connectivity with front-end.
7. Write Embedded and Nested Queries.
8. Create index and views
9. Create procedures, Triggers and cursers

PROGRAMS

1. Queries Using DDL- DML commands
2. Queries using AND- OR- NOT operation , Union- Intersection and Projection
3. Join Operation
- 4.. Sorting and Grouping
5. Nested queries using SQL
6. Built-in functions of SQL
7. Update operations using SQL
8. Use of SQL forms
9. Use of indexes- creating view and querying in views
10. Use procedures for Income Tax calculation
11. Use Cursor for Pay -roll system
12. Use Trigger for Inventory Processing System

BSI383	OPERATING SYSTEMS LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVES

- This Lab course will introduce the basic principles in Operating System. The objective of this course is to enable the students to get practical knowledge in

process management, Memory management, File management, Disk management, Network management, I/O management.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Write Programs for process creation and synchronization,
2. Write programs for Inter process communication including shared memory, pipes and messages
3. Write Programs using UNIX System calls.
4. Simulate CPU Scheduling Algorithms. (FCFS, RR, SJF, Priority, Multilevel Queuing)
5. Write Program for FIFO, LRU, and OPTIMAL page replacement algorithm

PROGRAMS

1. Write programs using the following system calls of UNIX operating system: fork, exec, getpid, exit, wait, close, stat, opendir, readdir
- 2 Write programs using the I/O system calls of UNIX operating system (open, read, write, etc)
- 3 Write C programs to simulate UNIX commands like ls, grep, etc.
4. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)
Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)
5. Developing Application using Inter Process communication (using shared memory, pipes or message queues)
6. Implement the Producer – Consumer problem using semaphores (using UNIX system calls).
7. Implement some memory management schemes – I
8. Implement some memory management schemes – II
Implement any file allocation technique (Linked, Indexed or Contiguous)

SEMESTER-IV

BSI401	UNIX AND SHELL PROGRAMMING	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

The objective of this course is to make the students to learn the concept of Unix operating system and let the students to work with the file system, editors, shell scripting, Unix utilities and regular expressions.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Edit text files using a terminal-based editor.
2. Manipulate files and directories.
3. Understand the concept of process and internal representation of files
4. Write shell scripts to automate common tasks and use awk command.
5. Use regular expressions to match patterns in files.
6. Develop C programs using build and debugging tools.

UNIT-I

General Overview of the System: System structure, user perspective, O/S services assumption about Hardware The Kernel and buffer cache architecture of Unix O/S, System concepts, Kernel data Structure, System administration, Buffer headers, Structure of the buffer pool, Scenarios for retrieval of the buffer, Reading and writing disk block, Advantage and disadvantage of buffer cache.

UNIT-II

Internal Representation of Files: INODES, Structure of regular, Directories conversions of a path name to an inode, Super block, Inode assignment to a new file, Allocation of disk blocks. System Calls for the System: Open read write file and record close, File creation, Operation of special files change directory and change root, change owner and change mode, STAT and FSTAT, PIPES Mounting and unmounting files system, Link Unlink.

UNIT-III

Structures of Processes and process control: Process states and transitions layout of system memory, the context of a process, manipulation of process address space, Sleep process creation/termination. The user Id of a process, changing the size of a process. The SHELL Interprocess Communication and multiprocessor system: Process tracing system V IPO network communication sockets problem of multiprocessors systems, solution with master and hare process, and solution with semaphores.

UNIT-IV

Introduction to shell scripts: shell Bourne shell, C shell, Unix commands, permissions, editors, filters sed, grep family, shell variables, scripts, metacharacters and environment, if and case statements, for while and until loops.

UNIT-V

Awk and Shell programming: Awk pattern scanning and processing language, BEGIN and END patterns, Awk arithmetic and variables, Awk built in variable names and operators, arrays, strings, functions, shell programming.

TEXT BOOKS

1. M.J. Bach “Design of UNIX O.S. “, Prentice Hall of India, Third Edition,2010.
2. Y.Kanetkar “Unix shell programming”, BPB Pub, Third Edition, 2012.
3. B.W. Kernighan & R. Pike, “The UNIX Programming Environment”, Prentice Hall of India, Fifth Edition, 2005.

REFERENCE BOOK:

1. S. Prata “Advanced UNIX: A Programming's Guide”, BPB Publications, New Delhi, Third Edition,2006.
2. Vikas/Thomson “Jack Dent Tony Gaddis “Guide to UNIX using LINUX” Pub. House Pvt. Ltd, Fourth Edition, 2008.
3. Sumitabha Das “ Unix concepts and Applications”, Prentice Hall of India, Fifth Edition 2009.

BSI402	COMPUTER NETWORKS	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- To be familiar with the basics of data communication;
- To be familiar with various types of computer networks;
- To have experience in designing communication protocols;
- To be exposed to the TCP/IP protocol suite.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Define, use and implement Computer Networks and the basic components of a Network system.
2. Know and Apply pieces of hardware and software to make networks more efficient, faster, more secure, easier to use, able to transmit several simultaneous messages, and able to interconnect with other networks.
3. Differentiate the various types of network configurations and applying them to meet the changing and challenging networking needs of organizations.

4. Understand the layers of OSI and TCP and get knowledge about congestion control and network security
5. Define the different protocols, software, and network architectures.
6. Define the concept of local area networks, their topologies, protocols and applications.
7. Analyze why networks need security and control, what errors might occur, and how to control network errors.

UNIT-I

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

UNIT-II

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

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

UNIT – IV

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

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

TEXT BOOKS

1. Andrew S. Tanenbaum: Computer networks, Prentice Hall of India, Fifth Edition, 2008.

REFERENCES

1. W. Stallings: Data and Computer communication, Prentice Hall of India, Eighth Edition, 2010.
2. Behrouz and Forouzan: Introduction to data communications and networking, McGraw Hill, Fourth Edition, 2008.

BSI403	WEB TECHNOLOGIES	L	T	P	C
		3	1	0	4

COURSE OBJECTIVE

- To build web applications using ASP and client side script technologies use with Microsoft's IIS.

- To build XML applications with DTD and style sheets that span multiple domains ranging from finance to vector graphics to genealogy for use with legacy browsers.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understand, analyze and apply the role of languages like HTML, DHTML, CSS, XML, Javascript, VBScript, ASP, PHP and protocols in the workings of the web and web applications
2. Analyze a web project and identify its elements and attributes in comparison to traditional projects.
3. Understand, analyze and create web pages using HTML, DHTML and Cascading Styles sheets.
4. Understand, analyze and build dynamic web pages using JavaScript and VBScript (client side programming).
5. Understand, analyze and build interactive web applications.
6. Understand, analyze and build web applications using PHP.
7. Understand, analyze and create XML documents and XML Schema.

UNIT-I

World Wide Web – Web browsers – Markup Languages –Style Sheet technologies – client side, server side - HTML – Headings –Links -images- Lists- Tables- Forms- Frames.

UNIT-II

Cascading style sheets-Inline styles-Embedded style sheets-Linking External style sheets- Positioning elements- Dynamic HTML – Object model and collections, Event model, Filters and Transitions.

UNIT-III

JAVASCRIPT-Introduction – Simple program-Decision making - Equality and Relational operators – Control statements – Functions – Programmer defined functions, JavaScript global functions, Recursion – Arrays – Objects .

UNIT-IV

XML-Introduction-Structuring data-XML namespaces-Document Type Definitions (DTDs) and Schema-W3C XML schema documents-XML vocabularies-Document Object Model (DOM), DOM methods- Simple API for XML (SAX)-Extensible Style sheet Language (XSL)-Simple Object Access Protocol (SOAP).

UNIT-V

PHP-Introduction-String processing and regular expressions-Viewing Client/Server environment variables-Form processing and Business logic-Verifying a username and password-connecting to a database

TEXT BOOKS

1. Deitel, Deitel and Neito, INTERNET and WORLD WIDE WEB – How to program, Pearson Education Asia, 5th Edition , 2011.

REFERENCES

1. Achyut S Godbole and Atul Kahate, “Web Technologies”, Second Edition, Tata McGraw Hill, 2012.
2. Thomas A Powell, Fritz Schneider, “JavaScript: The Complete Reference”, Third Edition, TataMcGraw Hill, 2013.
3. David Flanagan, “JavaScript: The Definitive Guide, Sixth Edition”, O'Reilly Media, 2011

BSI404	SOFTWARE ENGINEERING	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- The aim of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Select and implement different software development process models
2. Extract and analyze software requirements specifications for different projects
3. Develop some basic level of software architecture/design
4. Apply standard coding practices
5. Define the basic concepts and importance of Software project management concepts like cost estimation, scheduling and reviewing the progress.
6. Identify and implement of the software metrics
7. Apply different testing and debugging techniques and analyzing their effectiveness.
8. Analyze software risks and risk management strategies
9. Define the concepts of software quality and reliability on the basis of International quality standards.

UNIT - I

Software-Characteristics, Classification, Myths, Crisis, Software Engineering: Definition, Comparison with other disciplines, Ethics & professional practice , Phases in Software

Engineering, Challenges, Software Process, Project, Product - Components of Software process ,process framework, process assessment , Software Life Cycle Models , Selection criteria, Process change management , Quantitative process management

UNIT-II

Software Requirements – Definition, Types, Requirement Engineering process, Feasibility Study - Types of feasibilities, Process Requirements Elicitation - techniques, Requirements Analysis – Structured Analysis, Object Oriented Modeling, Other approaches, Requirements Specification – Structure of SRS, Requirements Validation , Requirements Management – A Case study

UNIT-III

Software Design – basic principles, concepts , Data design , Data Architectural design, Component level design , User Interface design ,Pattern based Software design, Design Notations, Design Reviews – types, process, evaluating reviews, Software Design Documentation, A Case study, Software Coding – features, guidelines, Methodology, Programming practices, Verification techniques, documentation

UNIT-IV

Software Testing - basics, guidelines, characteristics, Test Plan – steps in development, Software testing strategies, V Model of Software testing, Levels of Software testing – Unit, Integration, System, Acceptance, Testing Techniques (basic idea of black box and white box testing), Object Oriented testing, Debugging, Software test report, Software Maintenance – basics, Legacy Systems, factors affecting maintenance, types of maintenance, Life cycle, Models, Techniques

UNIT – V

Software Planning and Scheduling – project planning, planning process, project plan, Project Scheduling – principles, techniques, Project staffing , Risk management, Software Quality – Concepts, Quality Assurance Activities, Software reviews, Evaluation, Capability Maturity Model , Software Reliability, Software Configuration Management process, Concept of Software Re Engineering – approaches, process models.

TEXT BOOK :

1. Software Engineering Principles And Practices By Rohit, Khurana, Vikas Publishing House Pvt. Ltd. 2nd Edition,2010

REFERENCES :

1. Software Engineering A Practitioners Approach By ROGER S, Pressman 6th Edition Mcgraw Hill International Edition,2005
2. Rajib Mall, Fundamentals of Software Engineering, PHI,3rd Edition,2009

BSI481	UNIX AND SHELL PROGRAMMING LABORATORY	L	T	P	C
		0	0	4	2

COURSE OBJECTIVES

The objective of this course is to enable the students to understand unix system calls and let the students to write programs for IPC, to generate signals and threads and work with the file system.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Write programs using unix system calls.
2. Write shell programming using editors
3. Manipulate files and directories.
4. Create new process
5. Understand the concept of inter process communications using flock, msgque and pipe.
6. Generate new signals and threads
7. Write shell scripts to automate common tasks

PROGRAMS

1. Use of Unix/Linux User Commands
2. Editors
3. Shell programming
4. C programming on Unix/Linux – use of make, version control
5. Use of system calls – files – processes – I/O
6. IPC
7. File system – Memory Management
8. Drivers
9. Signals
10. Threads
11. Unix / Linux sources – build, run kernel – small modifications

BSI482	WEB TECHNOLOGIES LABORATORY	L	T	P	C
		0	0	4	2

COURSE OBJECTIVES

- On completion of this course, a student will be familiar with client server architecture and able to develop a web application using java technologies To create fully functional website/web applications.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Understand, analyze and apply the role of languages like HTML, DHTML, CSS, XML, Javascript, VBScript, ASP, PHP and protocols in the workings of the web and web applications

2. Analyze a web page and identify its elements and attributes.
3. Create web pages using HTML, DHTML and Cascading Styles sheets.
4. Create dynamic web pages using JavaScript and VBScript (client side programming).
5. Create interactive web applications using ASP.NET.
6. Build web applications using PHP.
7. Create XML documents and XML Schema.
8. Build and consume web services.

PROGRAMS

1.HTML and JavaScript

- a) Preparation of Bio-data using Forms in HTML.
- b) Simple Calculation
 - a. Inventory Calculation.
- c) Input Validation : Payroll maintenance
- d) Event Handling
 - a. Changing the Background Color of the Window.
- e) Develop a Dynamic Web page Using CSS properties and elements for a university website
- f) To generate the random numbers and display in a table format.
- g) Generation of Fibonacci series
- h) Different Pascal triangle generation
- i) Function to determine the pair of integers whether the second integer is multiple of the first.
- j) Quiz program
- k) Create a guessing number game
- l) HTML form validation

2.PHP and MYSQL

- a) Program to implement the concept of operator, arrays and functions
- b) Program to communicate between two web pages using PHP.
- c) Program to create session and cookies
- d) Program for file manipulation in PHP
- e) Create a database with two tables in MYSQL and perform the basic query operations.
- f) Demonstration of joining tables and usage of sub queries.
- g) Working with string, numeric and date functions in MYSQL.
- h) Develop a application for the demonstration of database connectivity to PHP with MySQL.
- i) Develop a simple application for student academic performance

SEMESTER-V

BSI501	INFORMATION SECURITY	L	T	P	C
		3	1	0	4

COURSE OBJECTIVE

- To provide students with basic concepts in information system and the benefits with these systems in modern society
- To maintain and protecting information system

COURSE OUTCOMES

Upon successful completion of this course, the students would be able to

1. Gain comprehensive information about security policies, establishing necessary organizational processes /functions for information security and will be able to arrange necessary resources.
2. Explain web security threats and SSL architecture
3. Gain knowledge about Symmetric Encryption Principles and algorithms
4. Know the hash functions and public key cryptography principles
5. Identify the threats to information security and Show how to protect information recourses
6. Demonstrate how to maintaining and protecting information system
7. Understand malicious software and have knowledge of cyber law and ethics.

UNIT-I

Introduction - Security Goals, OSI security architecture - Security Attacks - Security Services – Security mechanisms - A model for Internetwork security – Standards.

UNIT-II

Symmetric Encryption and message confidentiality Symmetric Encryption Principles - Symmetric Algorithms - DES, AES and RC4 - Block Cipher Modes of Operation.

UNIT-III

Public key cryptography and message authentication Approaches to message authentication – Hash function requirements – simple hash functions – HMAC – public key cryptography principles – RSA – Diffie-hellman key exchange.

UNIT-IV

Transport-Level Security Web security threats - Web traffic security approaches – SSL architecture – SSL record protocol – Alert protocol – Handshake protocol, Transport Layer security.

UNIT-IV

E-mail security, malicious software, Firewalls E-mail security – PGP, S/MIME, IP security overview – Types of malicious software - Anatomy of Virus, Virus Counter Measures – Firewalls – need, characteristics, types.

TEXT BOOK

1. William Stallings, Network Security Essentials: Applications and Standards, Fourth edition, PHI.
2. Mark Stamp, Information Security Principles & Practice, WILEY INDIA 2006.

REFERENCE(s)

1. Behrouz A. Forouzan, Cryptography & Network Security, TMH 2007.
2. Robert Bragg, Mark Rhodes, Network Security: The complete reference, TMH
3. Wenbo Mao, Modern Cryptography, Pearson Education 2007.

BSI502	COMPUTER GRAPHICS	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Demonstrate an understanding of contemporary graphics hardware.
2. Create interactive graphics applications in C++ using one or more graphics application programming interfaces.
3. Write program functions to implement graphics primitives.
4. Write programs that demonstrate geometrical transformations.
5. Demonstrate an understanding of the use of object hierarchy in graphics applications.
6. Write program functions to implement visibility detection.
7. Write programs that demonstrate computer graphics animation.
8. Write programs that demonstrate 2D image processing techniques.

UNIT – I

Overview of Graphic Systems – Display Devices – hard copy Devices – Interactive Input Devices – Display Processor – Graphic software – Output Primitives – Line Drawing Algorithms – Initialising Lines – Line command – fill areas – circle Generation Algorithms.

UNIT – II

Attributes of output primitives – line style – color and Intensity – area filling algorithms – character Attributes – inquiry functions – bundled attributes – two dimensional transformations – basic and composite transformations – metric representations.

UNIT – III

Windowing and Clipping – Windowing concepts – Clipping Algorithms – Window to view port Transformations – segments – Interactive input methods – Physical input devices – logical classification of input devices – interactive picture construction techniques – input functions.

UNIT – IV

Three dimensional concepts – 3D Display Techniques – 3D representation – polygon and curved surface – 3D transformations.

UNIT – V

3D viewing – projections – viewing transformation –Implementation of viewing operations – Hidden surface and Hidden Line removal – back free removal, depth buffer and scan line methods – shading.

TEXT BOOK:

1. Donald Hearn and M.Pualine Baker “Computer Graphics”,PHI , 2nd Edition.

REFERENCES

1. William M.Neuman and Robert F Sproul “Principles of Interactive computer Graphics” , McGraw Hill International Edition,2nd Edition.
2. Foley, van Dam, Feiner, and Hughes. Computer Graphics: Principles and Practice, 3rd edition in C.

BSI503	OBJECT ORIENTED ANALYSIS AND DESIGN	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- To show how we apply the process of object-oriented analysis and design to software development.
- To point out the importance and function of each UML model throughout the process of object-oriented analysis and design
- To Provide students with the necessary knowledge and skills in using object-oriented CASE tools

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Show the importance of systems analysis and design in solving complex problems.
2. Show how the object-oriented approach differs from the traditional approach to systems analysis and design.
3. Explain the importance of modeling and how the Unified Modeling Language (UML) represents an object-oriented system using a number of modeling views.
4. Construct various UML models (including use case diagrams, class diagrams, interaction diagrams, statechart diagrams, activity diagrams, and implementation diagrams) using the appropriate notation.
5. Recognize the difference between various object relationships: inheritance, association, whole-part, and dependency relationships.
6. Show the role and function of each UML model in developing object-oriented software.
7. Apply the Rational Software Suit for the construction of UML models and expressing the appropriate notation associated with each model.

UNIT-I

UML - More about UML - Visualizing a Class - Modeling a Class - Modeling the Relations among Classes - Test cases.

UNIT-II

Use Case Diagrams - Use Case Narratives - Use Case Scenarios - Use Case Relationships
Understanding the Activity Diagrams - Applying Use Cases

UNIT-III

Purpose of Sequence Diagrams - Notations of a Sequence Diagram - Object Lifeline -
Activation Message - Understanding Business Modeling - Purpose of State Chart
Diagram -Mapping Object Life Cycle - Notations for State Chart Diagrams -State and
Composite State -Event - Transition.

UNIT-IV

The Interaction Diagrams - Purpose of Collaboration Diagrams - Similarities and
Differences between Sequence and Collaboration Diagrams - Notations of a
Collaboration Diagram - Creation and Destruction Markers - Entity, Control, Boundary -
Apply interaction diagrams to evolve analytical model

UNIT-Y

Mechanisms - Apply mechanism - Subsystem Identification - Packaging - Architectural
patterns - Component Diagram - Deployment Diagram -Class design patterns - Class
design

TEXT BOOK:

1. Ali Bahrami, Object Oriented System Development, McGraw Hill International Edition, 2011.

REFERENCES

1. Craig Larman, Applying UML and Patterns, 2nd Edition, Pearson Education, 2002.
2. Grady Booch, James Rumbaugh, Ivar Jacobson, The Unified Modeling Language User Guide, Addison Wesley, 1999.

BSI581	GRAPHICS LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVES

1. Main objective of lab to measure the students' understanding of the Computer Graphics techniques concepts and algorithm.
2. To implement of line drawing, circle drawing, polygon drawing, transformation of objects, scaling, viewing, and curve designing and modeling algorithm practically for graphics.
3. To motivate students need to think critically and creatively in order to come with an alternate solution for an existing problem with computer graphics.

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COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Understand practical fundamental of line drawing, circle drawing, polygon drawing and curve drawing.
2. Understand the concepts of different type of geometric transformation of objects in 2D and 3D.
3. Understand the practical implementation of modeling, rendering, viewing of objects in 2D and 3D.
4. Get knowledge about clipping algorithms
5. List out the shapes and filling algorithms
6. Create Presentations using Multimedia tool
7. Perform Animation and Morphing using Multimedia tool

PROGRAMS

1. Implementation of Line Drawing Algorithms
2. Implementation of Circle Drawing Algorithms
3. Implementation of Ellipse Drawing Algorithms
4. Implementation of Output Primitives
5. Implementation of 2D Transformations
6. Implementation of Line Clipping Algorithms

7. Implementation of Polygon Clipping Algorithms

BSI582	INFORMATION SECURITY LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVE

- To provide students with basic concepts in information system and the benefits with these systems in modern society and to maintain and protecting information system

COURSE OUTCOMES

Upon successful completion of this course, the students would be able to

1. Generate RSA algorithm using C++ or java
2. Implement DES algorithm using C++ or java
3. Generate AES algorithm using C++ or java
4. Write Client server program in C++ for authentication
5. Implement RSA, AES algorithm for key generation

PROGRAMS**Section A** Cryptography Library (API)

1. Writing program in C++, C# or Java to implement RSA algorithm using Libraries (API)
2. Writing program in C++, C# or Java to implement DES algorithm using Libraries (API)
3. Writing program in C++, C# or Java to implement AES algorithm using Libraries (API)

Section B Programming

1. Writing program in C++ or Java to implement RSA algorithm for key generation and cipher Verification
2. Writing program in C++ or Java to implement AES algorithm for key generation.
3. Write a Client – Server programe in C++ or Java for authentication verification.
4. Develop and program in C++ or Java based on number theory such as chinese remainder or Extended Euclidian algorithm. (Or any other to illustrate number theory for security)

BSI583	OPEN SOURCE TECHNOLOGIES LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVES

- Open source laboratory introduces the students to develop technical solutions for problems using the open source software's readily available at free of cost. The objective of this course is to enhance the knowledge of students to address the IT requirements both from the operating system and application requirement perspective.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

1. Work on open source OS ubuntu.
2. Select and install the various open source software as per the requirement.
3. Construct the development environment as per the requirement.
4. Identify the associated plug-in's as per the requirement.
5. Learn the languages like PHP, Gambas, Perl, Python to develop an application as per requirement.
6. Create the virtualization environment.

PROGRAMS

1. Developing Applications using PHP
2. Developing Applications using JOOMLA
3. Developing Applications using Andriod
4. Developing Applications using PHYTHON
5. Developing Appliations using WordPress.

SEMESTER-VI

BSI601	VISUAL PROGRAMMING	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles. Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion, students should be able to design, code, test and debug at a beginning level.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Design, create, build, and debug Visual Basic applications.
2. Explore Visual Basic's Integrated Development Environment (IDE).
3. Implement syntax rules in Visual Basic programs.
4. Explain variables and data types used in program development.
5. Apply arithmetic operations for displaying numeric output.
6. Write and apply decision structures for determining different operations.
7. Write and apply loop structures to perform repetitive tasks.
8. Write and apply procedures, sub-procedures, and functions to create manageable code.
9. Create one and two dimensional arrays for sorting, calculating, and displaying of data.
10. Write Visual Basic programs using object-oriented programming techniques including classes, objects, methods, instance variables, composition, and inheritance, and polymorphism.
11. Write Windows applications using forms, controls, and events.

Unit I

Visual Basic – Variables – Constant – Arrays – Collections – Procedures – Subroutines, Functions, Calling Procedures – Arguments – Argument Passing Mechanisms, Using Optional Arguments, Passing an UnKnown Number of Arguments, Named Arguments – Function Return Values – Returning Custom Data Type, Arrays, Error as Function Values – Control Flow Statements – If..Then, If..Then..Else, Select Case – Loop

Statements – Do..Loop, For..Next, While..Wend – Nested Control Structures – The Exit Statement.

Unit II

Working With Forms: The Appearance of Forms – Start up, Loading, Showing and Hiding, Controlling – Designing Menus – Menu Editor, Programming Menu Commands, Using Access and Shortcut Keys, Manipulating Menus at Runtime – Building Dynamic form at Runtime.

Basic ActiveX Controls – The TextBox Control – Basic Properties, Manipulating Control's Text, Text Selection, Search and Replace Operations, Capturing KeyStrokes – The ListBox and ComboBox Control – Basic Properties, Control's methods, Indexing with the ListBox –Searching Sorted List, ComboBox Control – The ScrollBar and Slider Controls – ScrollBar Control, Slider Control – File Controls.

Unit III

Drawing with Visual Basic: Graphics Controls – Sizing Images, Loading and Saving Images, Setting Picture and Image Properties, Exchanging through Clipboard – Coordinate Systems – Scale properties and Methods, Twips Per Pixel X, Twips Per Pixel Y Properties, Current X Current Y Properties – Graphics Methods – Drawing Text, Line and Shapes, Filling Shapes, Circle Method, Drawing Modes, Drawing Curves – Optimization Issues.

Unit IV

Advanced ActiveX Controls: The Common Dialogs Control – Usage, Properties, Color, Font, FileOpen and FileSave Common Dialog Box, Multiple File Selection, Print and Help Common DialogBox – TreeView and List View – How Tree Structure work, ImageList, Using TreeView and List Control, Structuring Tree View Control, Viewing Folder's Files.

More Advanced ActiveX Controls: RichTextBox Control – RTFLanguage, Text Manipulation Properties, RichTextBox Control's Methods TextFormatting Properties – MSFlexGrid Control– Basic Properties, Data Entry – Multiple Document Interface – Basics, Built-in Capabilities, Parent and Child Menus – Accessing Child Forms.

Unit V

DataBase Programming: RecordSets, Data Control, Data Control's Properties, Data Control's Methods – Understanding Relational Concepts – Using Visual Data Manager – Structure of the BIBLIO DataBase – Validating Data – Entering Data – Accessing fields in Recordset –Introduction to SQL – Advanced Data – Bound Controls.

Active Data Objects: Creating Data Project – Designing with DataEnvironment ActiveX Designer – Designing Command Hierarchies, DataEnvironment with DataGrid Control and MSFlexGrid Control, DataReport ActiveX Designer – ADO Data Control – Programming the Active Data Objects, ADO Object Model, Using ADO, Establishing a Connection, Executing SQL Statements, Manipulating the Recordset Object, Record Editing and Updating.

Text Book

Evangelos Petroustos, Mastering Visual Basic 6, BPB Publications, New Delhi.

Reference

1. PK.MCBride, Programming in Visual Basic, BPB Publications, New Delhi.
2. Steve Brown, Visual Basic 6 in Record Time, BPB Publications.
3. Gary Cornell & Troy Strain, Visual Basic Nuts & Bolts For Experienced Programmers, MCGrawHill Publication, New Delhi.

BSI602	SOFTWARE TESTING	L	T	P	C
		3	1	0	4

COURSE OBJECTIVES

- The objective of this course is to make the student to learn the purpose of testing, Path testing, Data flow testing, domain testing, regular expressions and flow anomaly, Logic based testing.

COURSE OUTCOMES

Upon completion of the subject, students will be able to

1. Understands the process to be followed in the software development life cycle
2. Find practical solutions to the problems
3. Solve specific problems alone or in teams
4. Manage a project from beginning to end
5. Work independently as well as in teams
6. Define, formulate and analyse a problem

UNIT-I

Human and errors- Testing and Debugging- Software Quality-Requirement Behavior and Correctness- Fundamentals of Test Process- Psychology of Testing- General Principles of Testing- Test Metrics

UNIT-II

Review of software development models (Waterfall Models, Spiral Model, W Model-V Model) - Agile Methodology and Its Impact on testing- Test Levels (Unit, Component, Module, Integration, System, Acceptance, Generic)

UNIT-III

Static Testing- Structured Group Examinations -Static Analysis -Control flow & Data flow- Determining Metrics -Dynamic Testing -Black Box Testing -Equivalence Class Partitioning, Boundary Value Analysis, State Transition Test- Cause Effect Graphing and Decision Table Technique and Used Case Testing and Advanced black box techniques -White Box Testing -Statement Coverage, Branch Coverage, Test of

Conditions, Path Coverage, Advanced White Box Techniques, Instrumentation and Tool Support -Gray Box Testing- Intuitive and Experience Based Testing

UNITIV

Test Organization -Test teams, tasks and Qualifications -Test Planning Quality Assurance Plan- Test Plan, Prioritization Plan- Test Exit Criteria Cost and economy Aspects -Test Strategies - Preventive versus Reactive Approach, Analytical versus heuristic Approach - Test Activity-Management, Incident Management, Configuration Management -Test Progress Monitoring and Control -Specialized Testing: Performance, Load, Stress and Security Testing

UNIT-V

Automation of Test Execution, Requirement tracker, High Level Review Types of test Tools -Tools for test management and Control, Test Specification, Static Testing - Dynamic Testing, Non functional testing

TEXT BOOK:

1.Glenford J.Myers, "The Art of Software Testing", Second edition, John Wiley sons

REFERENCE:

1. Aditya P. Mathur, "Foundations of Software Testing", Addison-Wesley Professional, 2008
2. Ron Patton "Software Testing" Second Edition, Pearson Education
3. Naresh Chauhan " Software Testing Principles and Practices, Oxford University Press

BSI681	VISUAL PROGRAMMING LABORATORY	L	T	P	C
		0	0	3	2

COURSE OBJECTIVES

- This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles. The objective of this course is to make the student to learn how to design, code, test and debug programs using VC++ and VB.

COURSE OUTCOMES

Upon successful completion of this lab course, students will be able to

1. Design, create, build, and debug Visual Basic applications.
2. Apply arithmetic operations for displaying numeric output.
3. Apply decision structures for determining different operations.
4. Write and apply loop structures to perform repetitive tasks.
5. Write and apply procedures, sub-procedures, and functions to create manageable code.
6. Create one and two dimensional arrays for sorting, calculating, and displaying of data.

7. Write Visual Basic programs using object-oriented programming techniques including classes, objects, methods, instance variables, composition, and inheritance, and polymorphism.
8. Write Windows applications using forms, controls, and events.

PROGRAMS

1. Write a visual basic program to find the sum of digits till a single digit
2. Write a visual basic program to find the mid character of a string
3. Write a visual basic program to find the simple interest and compound interest
4. Write a visual basic program to check whether a given string is a palindrome or not
5. Write a visual basic program to find the binomial coefficient for a given N and R
6. Write a visual basic program to arrange the numbers in order
7. Write a visual basic program to the names in alphabetic order
8. Write a visual basic program to perform arithmetic operation using stack
9. Write a visual basic program to add and delete an item from a list
10. Write a visual basic program to transfer an item from one list to another list
11. Write a visual basic program to implement all time functions
12. Write a visual basic program to design a calculator using control arrays
13. Write a visual basic program to find day of the date after 'n' days from current date
14. Write a visual basic program to draw different shapes and fill them
15. Write a visual basic program to create your own note pad
16. Write a visual basic program to implement graphic functions and also to include free hand drawing.
17. Write a visual basic program to animate a picture
18. Write a visual basic program to prepare a mark statement for the students
19. Write a visual basic program to prepare the Electricity bill
20. Write a visual basic program to prepare the pay bill.

BSI682	SOFTWARE TESTING LABORATORY			L	T	P	C
				0	0	3	2

COURSE OBJECTIVES

- To demonstrate the UML diagrams for various applications
- To demonstrate the working of software testing tools.
- To Study of testing tools- win runner, selenium etc.
- To Write test cases for various applications

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understands the process to be followed in the software development life cycle
2. Find practical solutions to the problems
3. Solve specific problems alone or in teams
4. Manage a project from beginning to end
5. Work independently as well as in teams
6. Define, formulate and analyze a problem

PROGRAMS

1. Study of various tools for software testing such as WinRunner, LoadRunner, Rational Rose Test Suite etc.,
2. Performing the following testing using the testing tools
 - a. Requirements testing
 - b. use-case scenario testing
 - c. Design testing
 - d. Code testing
 - e. Path testing
 - f. Code coverage testing
 - g. Data-flow testing
 - h. Load testing
 - i. Regression testing
 - j. Documentation testing
3. Mini-project: developing an automated test-case generation tool for domains such as :
 - a. web-site development
 - b. inventory management
 - c. shopping cart

FIFTH SEMESTER ELECTIVES

BSI511	CLIENT SERVER COMPUTING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To learn the concept of client server computing and its benefits
- To learn the client components and categories of server
- To understand the benefits of intelligent database and security procedures.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understands the concept of client server computing
2. Explain the components of client server applications
3. Demonstrate the client side components
4. List the categories of server and features of server machines
5. Understand Intelligent server and security procedure

UNIT - I

Introduction to client/server computing - What is client/server computing- Benefits of client/server computing - Evolution of C/S computing-Hardware trends- Software trends - Evolution of operating systems - Networking (N/W) trends - Business considerations.

UNIT - II

Overview of C/S Application - Components of C/S Applications - Classes of C/S Applications - Categories of C/S Applications - Dispelling of myths -Obstacles - Upfront &Hidden - Open systems & Standards - Standard - Setting Organizations Factors for success.

UNIT - III

Client Component - Client operating systems - what is GUI - Database Access - GUI Environments – Converting 3270/5250 Screens-Database Tools - Client Requirements - GUI Design Standards - Interface Independence - Testing Interfaces.

UNIT - IV

Categories of Servers – Features of Server Machines - Classes of Server machines - N/W Management Environment - N/W computing Environments - Extensions - Network Operating System - Loadable Module.

UNIT - V

OS/ 2.0 - Windows new technology - Platform independence - Transaction processing - Connectivity - Intelligent database - Stored procedure - Triggers - Load leveling - Optimizer - Testing and diagnostic tools – Backup &recovery mechanisms.

TEXT BOOK:

1. Dawna Travis Dewire, Client-Server Computing, 1st Edition, Tata McGraw Hill, 2008

REFERENCES

1. Imtiyaz Alam Khan (IAK) “Elementary Bioinformatics”, Pharma Book Syndicate, 2005.
2. . Indu Shekhar Thakur (IST) “Environmental Biotechnology”, IK International Publication, 2nd Edition, 2011.

BSI512	BIO INFORMATICS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To study the Data Visualization & Statistic Sequence Visualization, bioinformatics tools, Modeling, Simulation & Collaboration and Data mining and pattern matching Methods

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understand the applications of Bioinformatics Applications
2. Gain knowledge about Data Visualization & Statistic Sequence Visualization
3. Demonstrate data mining and pattern matching Methods
4. Explain the concepts of Modeling, Simulation & Collaboration
5. Demonstrate Bioinformatics tools and algorithms

UNIT-I

Introduction, Historical overview, Bioinformatics Applications, Bioinformatics Major databases, Molecular biology.

UNIT-II

Data Visualization & Statistic Sequence Visualization, Structure visualization, statistical concepts, micro arrays, imperfects data, quantitative randomness, data analysis, tool selective, and statistics of alignment, clustering and classification.

UNIT-III

Data mining and pattern matching Methods & Technology overview, infrastructure, pattern recognition & discovery, machine learning, text mining & tools, dot matrix analysis, substitution matrices, dynamic programming, word methods, multiple sequence alignment, tools for pattern matching.

UNIT-IV

Modeling, Simulation & Collaboration Drug discovery, fundamentals, protein structure, System biology, collaboration & communications, standards, Issues.

UNIT V

Bioinformatics tools Introduction, working with FASTS, working with BLAST, FASTA & BLAST algorithms & comparison.

TEXT BOOK

1. S.C.Rastogi, N.Mendiratta, P.Rastogi “Bioinformatics-Methods & Application”, PHI, 2004.
2. Bryan Bergeron, “Bioinformatics Computing”, Pearson Education, 2002.

REFERENCES

1. Intiyaz Alam Khan (IAK) “Elementary Bioinformatics”, Pharma Book Syndicate, 2005.
2. Indu Shekhar Thakur (IST) “Environmental Biotechnology”, IK International Publication, 2nd Edition, 2011.

BSI513	NEURAL NETWORKS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To learn the concept of the Artificial Neural Networks
- To learn the concept of the Biological Neural Networks
- To understand the fundamentals of Expert Systems Architectures

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understand the concept of classification and clustering
2. Know the Feed forward Neural Networks Perceptron
3. Explain Pattern Analysis Regularization and RBF networks for function approximation
4. Understand Topological mapping and Kohonen’s self organizing map Feedback Neural Networks
5. Familiar with Expert Systems Architectures.

UNIT-I

Introduction to Artificial Neural Networks Biological Neural Networks, Pattern analysis tasks: Classification and Clustering, Computational models of neurons, Basic structures and properties of Artificial Neural Networks, Structures of Neural Networks Learning principles.

UNIT-II

Feedforward Neural Networks Perceptron, its learning law, Pattern classification using perceptron, Single layer and Multilayer feed forward Neural Networks (MLFFNNs), Pattern classification and regression using MLFFNNs, ADALINE: The Adaptive Linear Element, its Structure and Learning laws, Error back propagation learning, Fast learning methods: Conjugate gradient method, Auto associative Neural Networks, Bayesian Neural Networks.

UNIT-III

Radial Basis Function Networks and Pattern Analysis Regularization theory, RBF networks for function approximation, RBF networks for pattern classification - Kernel methods for pattern analysis: Statistical learning theory, Support vector machines for pattern classification, Relevance vector machines for classification.

UNIT-IV

Self organizing maps and feedback networks Pattern clustering, Topological mapping, Kohonen's self organizing map Feedback Neural Networks: Pattern storage and retrieval, Hopfield model, Boltzmann machine, Recurrent Neural Networks.

UNIT V

Expert Systems Architectures: Introduction, Rule Based System Architecture, Non-Production System Architecture, Dealing with uncertainty, Knowledge Acquisition and Validation.

TEXT BOOK

1. B.Yegnanarayana, "Artificial Neural Networks", Prentice Hall of India, 2009.
2. Satish Kumar, "Neural Networks – A Classroom Approach", Tata McGraw,Hill, 2004.
3. Dan W. Patterson., "Introduction to Artificial Intelligence and Expert Systems", PHI, New Delhi, 2001.

REFERENCES

1. S.Haykin, "Neural Networks – A Comprehensive Foundation", Prentice Hall, 1999.
2. C.M.Bishop, "Pattern Recognition and Machine Learning", Springer, 2000.

SIXTH SEMESTER ELECTIVES

BSI611	CLOUD COMPUTING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- This course introduces a series of current cloud computing technologies, including technologies for Infrastructure as a Service, Platform as a Service, Software as a Service, and Physical Systems as a Service. Objective of this course is to learn different layers of the cloud technologies, practical solutions such as Google, Amazon, Microsoft, Salesforce.com, etc. solutions as well as theoretical solutions.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Define cloud computing and related concepts
2. Understand the key dimensions of the challenges of Cloud Computing
3. Understand the assessment of the economics , financial, and technological implications for selecting cloud computing for an organization
4. Describe the benefits of cloud computing and to understand different layers of the cloud technologies, practical solutions
5. Understand the challenges of cloud computing
6. Understand how cloud components fit together
7. Determine the suitability of in-house v/s hosted solutions

UNIT I

Defining Cloud Computing: Definition - Cloud Types - Characteristics of Cloud Computing - Role of Open standards - Cloud Architecture: Cloud Computing Stack: Composibility.

UNIT II

Infrastructure - Platforms - Virtual Appliances - Communication protocols - Applications - Connecting to the cloud - Cloud Services: Infrastructure as a Service - Platform as a Service - Software as a Service

UNIT III

Identity as a Service - Compliance as a Service - Platforms: Load balancing and visualization– Understanding Hypervisors - Cloud Security: Securing the Cloud.

UNIT IV

Securing the data - Moving applications to the cloud - Cloud Storage: Definition – Provisioning – Cloud storage - Cloud Backup solutions - Cloud storage Interoperability

UNIT V

Moving applications to the Cloud - Case Study: Google Web Services- Amazon Web Services - Microsoft Cloud Services.

TEXT BOOK:

1. Barrie Sosinsky, Cloud Computing Bible Wiley India Private Limited India, 2011.

REFERENCE BOOKS:

1. Roger Jennings, Cloud Computing with Windows Azure Platform, Wiley India Private Limited, 2009.
2. Miller Michael, Cloud Computing: Web Based Applications that Change the Way You Work and Collaborate Online, Pearson Publication, 2008.

BSI612	E- BUSINESS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To understand the interest and opportunity of e-commerce
- To know how to plan and how to manage e-commerce solutions
- To apply processes of e-commerce and to analyze and understand the human, technological and business environment associated with e-commerce
- To know how to use technologies to build e-commerce websites

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Define and analyze the principles of E-commerce and basics of World Wide Web.
2. Define and analyze the concept of electronic data interchange and its legal, social and technical aspects.
3. Define and analyze the security issues over the web, the available solutions and future aspects of e-commerce security.
4. Define and analyze the concept of E-banking, electronic payment system

UNIT I

Electronic Commerce Environment and Opportunities: Background – The Electronic Commerce Environment – Electronic Marketplace Technologies – Modes of Electronic Commerce: Overview – Electronic Data Interchange – Migration to Open EDI – Electronic Commerce with WWW/Internet – Commerce Net Advocacy – Web Commerce going forward.

UNIT II

Approaches to Safe Electronic Commerce: Overview – Secure Transport Protocols – Secure Transactions – Secure Electronic Payment Protocol(SEPP) – Secure Electronic Transaction (SET)- Certificates for Authentication – Security on Web Servers and Enterprise Networks – Electronic cash and Electronic payment schemes: Internet Monetary payment and security requirements – payment and purchase order process - Online Electronic cash.

UNIT III

Internet/Intranet Security Issues and Solutions: The need for Computer Security – Specific Intruder Approaches – Security strategies – Security tools – Encryption – Enterprise Networking and Access to the Internet – Antivirus programs – Security Teams.

UNIT IV

MasterCard/Visa Secure Electronic Transaction: Introduction – Business Requirements – Concepts – Payment processing – E-mail and secure e-mail technologies for electronic commerce. Introduction – The Mean of Distribution – A model for message handling – Working of Email - MIME: Multipurpose Internet Mail Extensions – S/MIME: Secure Multipurpose Internet Mail Extensions – MOSS: Message Object Security Services.

UNIT V

Internet and Website Establishment: Introduction – Technologies for web servers – Internet tools relevant to Commerce – Internet Applications for Commerce – Internet charges – Internet Access and Architecture – Searching the Internet- Case study.

TEXT BOOK

1. Daniel Minoli and Emma Minoli- “Web Commerce Technology Handbook”- Tata McGraw-Hill- 2005.

REFERENCES

1. The Complete E-Commerce Book, Second Edition: Design, Build & Maintain a Successful Web-based Business by Janice Reynolds
2. E-commerce: Get It Right! By Ian Daniel
3. E-Commerce 2009: Business, Technology, and Society by Kenneth Laudon and Carol Guercio Traver

BSI613	DATA MINING AND DATA WAREHOUSING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES

- To interpret the contribution of data warehousing and data mining to the decision support level of organizations

- To evaluate different models used for OLAP and data pre-processing
- To categorize and carefully differentiate between situations for applying different data mining techniques: mining frequent pattern, association, correlation, classification, prediction, and cluster analysis

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

1. Understand the data extraction and transformation techniques.
2. List the association rule mining techniques and understand association mining to correlation analysis, constraint based association mining.
3. Understand operational database, warehousing and multidimensional need of data base to meet industrial needs.
4. Understand the components of warehousing, classification methods and clustering analysis.
5. Identify and understand the Business analysis, query tools and application, OLAP etc.

UNIT I

Data Preprocessing- Language- Architectures- Concept Description: Preprocessing- Cleaning- Integration- Transformation- Reduction- Discretization- Concept Hierarchy Generation- Data Mining Primitives- Query Language- Graphical User Interfaces- Architectures- Concept Description- Data Generalization- Characterizations- Class Comparisons- Descriptive Statistical Measures.

UNIT II

Association Rule: Association Rule Mining- Single-Dimensional Boolean Association Rules from Transactional Databases- Multi-Level Association Rules from Transaction Databases-mining multidimensional Association rules –association mining to correlation analysis-constraint based association mining.

UNIT III

Classification and Prediction: Classification and Prediction- Issues- Decision Tree Induction- Bayesian Classification- Association Rule Based- Other Classification Methods- Prediction- Classifier Accuracy.

UNIT IV

Cluster Analysis: Cluster Analysis- Types of data- Categorization of methods- Partitioning methods- hierarchical methods- density based methods- grid based methods - Outlier Analysis. Recent trends - Multidimensional Analysis and Descriptive Mining of Complex Data Objects- Spatial Databases- Multimedia Databases- Time Series and Sequence Data- Text Databases- World Wide Web- Applications and Trends in Data Mining

UNIT V

Data Warehousing: Introduction- Data Warehouse- Multidimensional Data Model- Data Warehouse Architecture- Implementation - Data Warehousing to Data Mining -Data warehousing components-building a data warehouse – mapping the data warehouse to an architecture - data extraction - cleanup- transformation tools- metadata – OLAP - Patterns and models - Data visualization principles.

TEXT BOOKS

1. J. Han and M. Kamber- “Data Mining: Concepts and Techniques”- Harcourt India Morgan Kauffman- 2001.
2. Alex Berson and Stephen J. Smith- “Data Warehousing- Data mining and OLAP”- Tata McGraw-Hill- 2004.

REFERENCES

1. Margaret H. Dunham- “Data Mining: Introductory and Advanced Topics”- Pearson Education- 2004.
2. Sam Anahory and Dennis Murry- “Data Warehousing in the Real World”- Pearson Education- 2003