KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052
(An Autonomous Institution affiliated to Anna University of Technology, Coimbatore)

B.Sc. DEGREE IN INFORMATION TECHNOLOGY (3 YEARS)

CURRICULUM

(For the candidates admitted from academic year 2011 – 12 onwards)

SEMESTER - I

Course Code	Course Title	Hours / Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11BC101	Technical English	3	0	0	3	50	50	100
11BC102	Applied Mathematics I	3	1	0	4	50	50	100
11BC103	Digital Principles	3	1	0	4	50	50	100
11BC104	Office Automation	3	1	0	4	50	50	100
11BC105	Programming in C	3	1	0	4	50	50	100
	PRACTICAL							
11BC106	Digital Laboratory	0	0	3	1	50	50	100
11BC107	Office Automation Laboratory	0	0	3	1	50	50	100
11BC108	C Programming Laboratory	0	0	3	1	50	50	100
				Total	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052
(An Autonomous Institution affiliated to Anna University of Technology, Coimbatore)

B.Sc. DEGREE IN INFORMATION TECHNOLOGY (3 YEARS)

CURRICULUM
(For the candidates admitted from academic year 2011 – 12 onwards)

SEMESTER - II

Course Code	Course Title	Hours / Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11BC201	Functional English	3	0	0	3	50	50	100
11BC202	Applied Mathematics II	3	1	0	4	50	50	100
11BC203	Object Oriented Programming using C++	3	1	0	4	50	50	100
11BC204	Basics of Electrical and Electronics Engineering	3	1	0	4	50	50	100
11BC205	Data Structures	3	1	0	4	50	50	100
	PRACTICAL							
11BC206	Object Oriented Programming Laboratory	0	0	3	1	50	50	100
11BC207	Electrical and Electronics Engineering Laboratory	0	0	3	1	50	50	100
11BC208	Data Structures Laboratory	0	0	3	1	50	50	100
				Total	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052
(An Autonomous Institution affiliated to Anna University of Technology, Coimbatore)

B.Sc. DEGREE IN INFORMATION TECHNOLOGY (3 YEARS)

CURRICULUM
(For the candidates admitted from academic year 2011 – 12 onwards)

SEMESTER - III

Course Code	Course Title	Hours / Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11BC301	Numerical Methods	3	1	0	4	50	50	100
11BC302	Java Programming	3	1	0	4	50	50	100
11BC303	Computer Architecture	3	1	0	4	50	50	100
11BC304	Database Management Systems	3	1	0	4	50	50	100
11BI301	Principles of Data Communication	3	0	0	3	50	50	100
	PRACTICAL							
11BC306	Java Programming Laboratory	0	0	3	1	50	50	100
11BC307	Database Management Systems Laboratory	0	0	3	1	50	50	100
11BC308	Communication Skills and Career Development Laboratory	0	0	3	1	50	50	100
				Total	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052
(An Autonomous Institution affiliated to Anna University of Technology, Coimbatore)

B.Sc. DEGREE IN INFORMATION TECHNOLOGY (3 YEARS)

CURRICULUM
(For the candidates admitted from academic year 2011 – 12 onwards)

SEMESTER - IV

Course Code	Course Title	Hours / Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11BC401	Operations Research	3	1	0	4	50	50	100
11BI401	Computer Graphics and Multimedia	3	1	0	4	50	50	100
11BC403	Computer Networks	3	1	0	4	50	50	100
11BC404	Operating Systems	3	1	0	4	50	50	100
	Elective I	3	0	0	3	50	50	100
	PRACTICAL							
11BI402	Computer Graphics and Multimedia Laboratory	0	0	3	1	50	50	100
11BC406	Networks Laboratory	0	0	3	1	50	50	100
11BC407	Operating Systems Laboratory	0	0	3	1	50	50	100
				Total	**22**			

CA – Continuous Assessment, ESE – End Semester Examination

KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052
(An Autonomous Institution affiliated to Anna University of Technology, Coimbatore)

B.Sc. DEGREE IN INFORMATION TECHNOLOGY (3 YEARS)

CURRICULUM
(For the candidates admitted from academic year 2011 – 12 onwards)

SEMESTER - V

Course Code	Course Title	Hours / Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11BI501	Mobile Computing	3	0	0	3	50	50	100
11BC501	Web Technology	3	1	0	4	50	50	100
11BC502	Visual Programming	3	1	0	4	50	50	100
11BC503	Software Engineering	3	1	0	4	50	50	100
	Elective II	3	0	0	3	50	50	100
	PRACTICAL							
11BC505	Web Programming Laboratory	0	0	3	1	50	50	100
11BI502	Visual Programming and CASE Tools Laboratory	0	0	3	1	50	50	100
11BI503	Mobile Computing Laboratory	0	0	3	1	50	50	100
				Total	**21**			

CA – Continuous Assessment, ESE – End Semester Examination

KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052
(An Autonomous Institution affiliated to Anna University of Technology, Coimbatore)

B.Sc. DEGREE IN INFORMATION TECHNOLOGY (3 YEARS)

CURRICULUM
(For the candidates admitted from academic year 2011 – 12 onwards)

SEMESTER – VI

Course Code	Course Title	Hours / Week			Credit	Maximum Marks		
		L	T	P		CA	ESE	Total
	THEORY							
11BI601	Information Security	3	1	0	4	50	50	100
11BI602	XML and Web Services	3	0	0	3	50	50	100
	Elective III	3	0	0	3	50	50	100
	Elective IV	3	0	0	3	50	50	100
	PRACTICAL							
11BI603	Project Work	0	0	8	8	100	100	200
				Total	**21**			

CA – Continuous Assessment, ESE – End Semester Examination

Total Credits: 130

LIST OF ELECTIVES FOR B.Sc. INFORMATION TECHNOLOGY

Course Code	Course Title	Pre - Requisite	L	T	P	C
11BI011	Service Oriented Architecture	Web Technology	3	0	0	3
11BI012	Fundamentals of Digital Signal Processing	Applied Mathematics	3	0	0	3
11BC305	Object Oriented Analysis and Design	Software Engineering	3	0	0	3
11BC601	Data Warehousing and Data Mining	Database Management Systems	3	0	0	3
11BS601	Software Project Management	Software Engineering	3	0	0	3
11BC012	Cloud Computing	Computer Networks	3	0	0	3
11BC013	Enterprise Resource Planning	Not required	3	0	0	3
11BC014	Professional Ethics and Human Values	Not required	3	0	0	3
11BC015	Environmental Science and Engineering	Not required	3	0	0	3
11BC016	Component Based Technology	Java Programming	3	0	0	3
11BC017	E-Commerce	Not Required	3	0	0	3
	COMMON ELECTIVES					
11BI013	Software Agent	Software Engineering	3	0	0	3
11BI014	Advanced Java Programming	Java Programming	3	0	0	3
11BI015	Middleware Technologies	Java Programming	3	0	0	3
11BI016	Wireless Technology	Computer Networks	3	0	0	3
11BI017	Embedded Systems	Digital Principles	3	0	0	3

11BC101 TECHNICAL ENGLISH

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To impart the basic knowledge of English for technical communication.
- To understand the use of language components such as grammar for technology.
- To enhance the LSRW skills needed for day – to – day communication.

MODULE – I **15**

Focus On Language: Affixes and roots – prefixes and suffixes – word formation and derivation – subject – verb agreement – tenses – impersonal passive – using numbers and approximations – redundant words – making adjectives, adverbs and prepositions – gerund and infinitives – imperatives.

MODULE - II **15**

Listening and Speaking: Types of listening – implications of effective listening – gap filling activity while listening-listening to a discourse and filling up gaps in a worksheet – comprehension tasks based on listening-note taking –listening for specific details. Making oral presentations – planning a presentation –different kinds of presentation – adapting a speaker's ideas to audience – planning the use of visual and other devices to involve audience - asking and giving advice – group discussion – organizing content – role play.

MODULE – III **15**

Reading and Writing: Comprehending a complex text – understanding relations between part of a text – reading comprehension – dictionary skills – identifying main idea. Transferring information into charts and tables – writing descriptions of buildings and people – essay writing and report writing – vocabulary – defining specific scientific terms.

TOTAL: 45

TEXT BOOKS

1. Aysha Viswamohan, "English for Technical Communication", Tata McGraw Hill Publishing Company limited, New Delhi, 2008.
2. Steven M Gerson and Sharon J Gerson, "Technical Writing – Process and Product" , Third edition, Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2008.

REFERENCE BOOKS

1. Aruna Koneru, "Professional Communication" , Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
2. Krishna Mohan and Meera Banerjee, "Developing Communication Skills", Macmilan India Ltd, Reprinted 2007.
3. Andrea J. Rutherford, "Basic Communication Skills for Technology", Second Edition, Pearson Education, 2007.

11BC102 APPLIED MATHEMATICS - I

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To bestow the knowledge of basic mathematic skills.
- To improve the problem solving skills applying the Mathematical concepts while doing computer programming in engineering field.

MODULE – I **14**

Matrices: Characteristic Equation of a matrix – Eigen values and Eigen vectors – Properties of eigen values and eigen vectors – Cayley Hamilton theorem (without proof) –calculation of A^{-1} , $A^3$and A^4 for 3x3 matrices – Quadratic forms - Reduction of Quadratic form to Canonical form by Orthogonal reduction.

MODULE - II **16**

Ordinary Differential Equations and Complex Number: Ordinary Differential Equation:Solution of second order ODE with constant coefficients and Variable coefficients(Euler's type only) – Complementary function – Particular integrals of the type: e^{ax}, sinh(ax), cosh(ax), x^n, sin(ax), cos(ax), e^{ax} x^n , e^{ax} sin(bx), e^{ax} cos(bx).

Complex Numbers:Expansion of sin nθ, cos nθ in terms of sin θ and cos θ - Expansion of sin $^n\theta$, cos $^n\theta$ in terms of sines and cosines of multiples of θ - Hyperbolic functions, inverse hyperbolic functions- simple problems.

MODULE - III **15**

Statistical Measures & Linear Regression and Correlation: Statistical measures: Summarizations of uni and multi dimensional data – frequency distribution - Measures of central tendency: mean, median, mode.

Measures of dispersion: range, quartile deviation, mean deviation, standard deviation - simple problems.

Correlation coefficients: Karl Pearson's coefficient of correlation-Spearman's rank correlation – Regression analysis: Regression lines – regression coefficients – simple problems.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

1. Veerarajan.T, "Engineering Mathematics First year", Tata McGraw-Hill, New Delhi,2008.
2. Gupta. S.P, "Practical Statistics", S.Chand & Company Ltd, New Delhi-reprint 2010.

REFERENCE BOOKS

1. Kandasamy.P.,Thilagavathy.K and Gunavathy.K-"Engineering Mathematics", Volume - I, S.Chand & Co., New Delhi, 2005.
2 Venkatasubramanian N.K, Lakshminarayanan, Sundaram V, Balasubramanian, "Engineering Mathematics", Vikas Publishing House Pvt Ltd, NewDelhi,2000.
3. Kapur. J.N. and Saxena. H.C. "Mathematical Statistics", 12th edition, S.Chand & Company Ltd, NewDelhi, 2001.

11BC103 DIGITAL PRINCIPLES

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To provide an in-depth knowledge of the design of digital circuits.
- To understand different methods used for the simplification of Boolean function.
- To design and implement combinational and sequential circuits

MODULE – I **15**

Binary Systems and Boolean Algebra: Digital systems- Binary Numbers- Octal Numbers- Hexa Decimal Numbers- Number Base Conversions- Complements-1's Complement, 2's Complement, addition, subtraction- Signed numbers- Binary codes- Binary storage and registers- Binary Logic.

Boolean Algebra and Logic gates: Basic theorems and properties of Boolean Algebra- Boolean functions- Canonical and Standard Forms- Digital Logic Gates.

MODULE - II **15**

Combinational Logic and Minimization: Minimization: POS, SOP- K-Map Method: 2-variable, 3-variable, 4-variable- Don't care conditions- NAND, NOR Implementation.

Combinational circuits- Analysis Procedure- Binary Adder-Subtractor- Half Adder, Full Adder, Half Subtractor, Full Subtractor , -Decimal Adder- Binary multiplier- Magnitude comparator-Decoders-Encoders- Multiplexers-Demultiplexer.

MODULE – III **15**

Synchronous Sequential Logic, Registers and Counters: Sequential circuits- Latches- SR, D latches - Flip-Flops- D Flip-Flop, JK Flip-Flop,T Flip-Flop, characteristic table, characteristic equation -Analysis of clocked sequential circuits: Analysis of D flip-flops, Analysis of JK Flip-Flops, Analysis of T Flip-Flops.

Registers and counters: Registers, Shift Registers- Ripple counters-Binary Ripple counters, BCD Ripple counters- Synchronous counters- Binary, BCD counter- Ring counters-Johnson counter.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Mano, M Morris. "Digital Design", Fourth Edition, Reprint "Pearson Education", Delhi, 2008.

REFERENCE BOOKS

1. Floyd Thomas L., "Digital Fundamentals", 10th Edition, UBS, 2008.
2. Yarbrough, John M. "Digital Logic Applications and Design", Thomson Publications, New Delhi, 2007.
3. Givone, Donald D., "Digital Principles and Design", Tata McGraw-Hill, New Delhi, 2003.

11BC104 OFFICE AUTOMATION

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To learn basics of computers.
- To become familiar with the essentials for working with latest version of Microsoft Office programs.

MODULE – I **15**

Fundamentals of Computers: Understanding the computer - Input Devices – Output Devices – Computer Software: Introduction, Types of Computer Software, System Management Programs, System Development Programs, Standard Application Programs, Problem Solving – Data Communication and Networks: Introduction, Data Communication using Modem, Computer Networks, Application of Network – The Internet and World Wide Web: Introduction, History of the Internet, Internet Applications.

MODULE - II **15**

Word Processing and Spreadsheet: Viewing and Editing Text in Word- Formatting in word- Working with Special Content in Word: Inserting a Cover Page, Inserting an Equation, Creating a Table of Contents, Printing an Envelope, Printing a Mailing Label, Mail Merge - Working in Excel- Analysing and presenting data in Excel: Creating a Table, Cell References, Formulas & Functions- Calculations, Doing the Arithmetic, Summing the Data, Creating a Series of Calculations, Making Calculations with Functions, Sorting and Filtering data, The Anatomy of a chart: Charting your data, Formatting and Customizing a chart.

MODULE -III **15**

Presentation and Access: Creating a PowerPoint presentation – Presenting a PowerPoint slide show: Adding speaker notes, Running a slide show, Recording a Narration, Timing a presentation, Using Navigation Buttons, Creating pictures of your slides, Changing slide show settings - Working in Access - Exchanging Information among Office Programs: Inserting a PowerPoint slide show into a document, Worksheet or Publication, Adding Excel data to an Access database, Using Access Data in a Mail Merge, Managing and Editing your pictures, Linking to a File or to a Web Page, Managing Pictures, Videos and Sound Files

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

1. Balagurusamy. E, **"**Fundamentals of Computers" **,** Tata McGraw-Hill Ltd, New Delhi, 2009 (Module –I)
2. Joyce Jerry and Moon, Marianna., "2007 Microsoft Office System Plain and Simple", PHI Learning, New Delhi, 2009 (Module –II, III).

REFERENCE BOOKS

1. Leon Alexis, and Leon Mathews, "Introduction to Information Systems" Vijay Nicole Imprints Private Limited, First Edition, 2008.
2. Rajaraman, "Fundamentals of Computers", 4th Edition, PHI Learning, 2008.
3. Peter Norton, "Introduction to Computers", 4th Edition, Tata McGraw-Hill, New Delhi, 2006.

11BC105 PROGRAMMING IN C

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To introduce the basic programming concepts in C.
- To explore the functionalities in C programming language.
- To inculcate the knowledge and an ability to solve the real world problems.

MODULE – I **15**

Introduction , Decision Making and Looping: Overview of 'C' language- Constants, Variables and Data types - Operators, Expressions and Assignment Statements- Managing Input and Output Operations- Formatted I/O- Decision Making and Branching- if, switch, goto Statements - Looping- while, do..while, for statements.

MODULE - II **15**

Arrays, Functions and Pointers: Arrays - One Dimensional, Two Dimensional and Multi-dimensional arrays - Character Arrays and Strings- User defined Functions – Pointers - Accessing the Address of a Variable – Declaration - Initialization – Accessing a Pointer Variable – Chain of Pointers – Pointer Expressions – Scale Factor - Pointers and Arrays - Array of Pointers.

MODULE - III **15**

Structures, Unions and File Management: Basics of Structures- Declaring a structure- Array of structures- Passing structure elements to functions- Passing entire structure to function- Structures within structures- Union- Union of structures- File management in C- I/O Operations on Files, Error Handling During I/O Operations- Random access file- Preprocessors - Macro Substitution, File Inclusion, Compiler Control Directives.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Balaguruswamy, E. "Programming IN ANSI C", 4th Edition, Tata McGraw-Hill, New Delhi, 2007.

REFERENCE BOOKS

1. Rajaraman.V, "Computer Programming in C", Prentice Hall of India, New Delhi, 2004.
2. Venugopal K.R, Prasad S.R, "Mastering C", Tata McGraw-Hill, New Delhi, 2006.
3. Kamthane, A.N. "Programming with ANSI and Turbo C", Pearson Education, Delhi 2006.
4. Smarajit Ghosh, "Programming in C", Prentice Hall of India, New Delhi, 2009.
5. Kernighan Brain W. and Ritchie Dennis M., "The C Programming Language", (ANSI C Version), 2nd Edition, Prentice Hall of India, New Delhi, 2009.

11BC106 DIGITAL LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Binary and BCD counter
2. Verification of NAND, NOR, XOR, AND, OR Gate Logic
3. Parity Generator
4. Multiplexer / Demultiplexers
5. Encoder / Decoder
6. Half Adder / Full Adder
7. Half Subtractor / Full Subtractor
8. Code Converters
9. Up / Down 4 bit Binary Counter
10. Up / Down 4 bit Decimal Counter
11. Shift Register
12. Ring counter

11BC107 OFFICE AUTOMATION LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Creating Editing and Formatting a word document
2. Creating a Flowchart Using MS- Word
3. Creating a Model Newspaper
4. Creating a Mail Merge
5. Creating Editing and Formatting a Worksheet
6. Creating a chart using MS-Excel
7. Functions and Formulas using MS-Excel
8. Sorting and Filtering
9. PowerPoint Presentation
10. Create Table Using Access
11. Generate Report using Access
12. Executing Queries in Access
13. Import and Export Data

11BC108 C PROGRAMMING LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1.Input / output function
2.Operators and Expression
3.Decision Making and Branching
4. Looping statements
5. Arrays
6. Functions
7.Recursive Functions
8.String Handling Functions
9. Pointers
10.String using Pointers (Use Linux)
11. Structures and Unions (Use Linux)
12.Files (Use Linux)

Case study:

Roots of a quadratic equation – Matrix Operations – Evaluation of trigonometric functions –calculate NCR using function– Pay roll problems. String operations like substring, concatenation, finding a string from a given paragraph, finding the number of words in a paragraph, Reverse of a string using pointers, Counting number of words, lines in a file.

11BC201 FUNCTIONAL ENGLISH

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To bestow the basic knowledge of the functional skills in English.
- To improve the language needed for different situations and different purposes.
- To enrich the grammar for effective use of language in both spoken and written communication.

MODULE – I **15**

Focus on Grammar: Subject-pronoun agreement – punctuation – abbreviations and technical terms – modifiers – connectives – spelling rules - degrees of comparison – sentence structure: fragments, run-on, parallelism - transformation of sentences – transitional words and phrases.

MODULE - II **15**

Listening: difference between listening and hearing – process of listening – modes of listening – advantages of listening : conversation, negotiation, group discussion and meetings – factors affecting listening: external factors and internal factors – note-taking

Reading: mechanics of reading – skimming – scanning – summarizing - paraphrasing - undesirable reading habits – improving reading skill, types of reading, reading speed and techniques for comprehension.

MODULE – III **15**

Speaking: purposes – planning and procedure - effective presentation : combating stage fright, audience awareness, choosing a topic, developing a presentation and use of visual aids – informal presentation - formal presentation – telephoning and voice mail – participating in interviews.

Writing: introduction to technical writing - memo writing – preparing and sending e-mails and brochure – document design – letter writing : letter of application, letter of inquiry and complaint letter – proposal writing – article writing.

TOTAL: 45

TEXT BOOK

1. Gerson Sharon J. and Gerson Steven M., "Technical Writing: Process and Product", Fifth Edition, Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2007.

REFERENCE BOOKS

1. Sangeeta Sharma and Mishra Binod, "Communication Skills for Engineers and Scientists", PHI Learning Pvt. Ltd., New Delhi, 2009.
2. Aruna Koneru, "Professional Communication", Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
3. Leena Sen, "Communication Skills", Prentice Hall of India Pvt. Ltd., New Delhi, 2007.

11BC202 APPLIED MATHEMATICS II

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To grasp the basics of vector calculus comprising of gradient, divergence and curl and line, surface and volume integrals along with the classical theorems involving them.
- To have a sound knowledge of analytical functions and Laplace transforms.

MODULE – I **15**

Vector Calculus: Vector Differential calculus: Scalar and vector point functions- vector operator ∇, gradient, Directional derivative, Divergence and curl of vectors – Irrotational and solenoidal vectors – Vector identities (without proof) Vector Integral calculus: Line Integral – Surface Integrals and Volume Integrals – Verification of Gauss Divergence theorem (without proof) – cubes and rectangular parallelopiped –Verification of Green's theorem (without proof) – circle and ellipse – Verification of Stoke's theorem (without proof) -Square, rectangle – Simple problems

MODULE – II **15**

Analytic Functions and Complex Integration: Analytic functions – properties - Cauchy Riemann equations – Harmonic functions – Construction of Analytic function whose real and imaginary part is given – Cauchy's integral theorem –Cauchy's integral formula — Singularities – Calculation of residues – Cauchy's Residue theorem – simple problems

MODULE - III **15**

Laplace Transforms: Laplace Transforms – transforms of some standard functions – properties- transforms of derivative and integrals - transforms of functions of the type $t^n f(t)$, $f(t)/t$ – initial and final value theorems – inverse Laplace transform of trigonometric and logarithmic functions – problems of type partial fraction method - simple problems

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Veerarajan. T, "Engineering Mathematics- First year", Tata McGraw-Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Grewal. B.S., "Engineering Mathematics", Khanna Publishers, Delhi, 2006.
2. Singaravelu. A. "Engineering Mathematics – II", Meenakshi Agency, Chennai, 2006.
3. Kandasamy P, Thilagavathy K and Gunavathy K., "Engineering Mathematics", Volume. I & II, S.Chand & Co., New Delhi, Revised edition 2005.

11BC203 OBJECT ORIENTED PROGRAMMING USING C++

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To impart knowledge on object oriented concepts and programming skills in C++.
- To write applications in an object-oriented language.
- To provide ways of modularizing programs in C++.

MODULE – I **15**

Introduction, Functions, Class and Objects: Object Oriented Programming paradigm – Basic Concepts – Benefits of OOP – Beginning with C++ – Structure of C++ program –Tokens, Expressions and Control Structures. Functions in C++: Main Function – Function prototyping – Call by reference – Return by reference – Inline functions – Function overloading – Classes and objects - Specifying a class – Defining Member functions -Making an outside function inline – Nesting of member functions – Private member functions – Arrays within a class – Memory allocation for objects – Static data members and member functions – Arrays of objects – Friendly functions – Pointers to members.

MODULE – II **15**

Constructors, Operator Overloading, Conversion and Inheritance: Constructors and destructors : Constructors – parameterized constructors – Multiple constructors – Copy constructor – Dynamic constructors – Destructors – Operator overloading and type conversions : Overloading unary operators – Overloading binary operators – Overloading binary operators using friends – Manipulation of strings using operators – Rules for overloading operators – Type conversions- Inheritance : Single inheritance – Making a private member inheritable – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance.

MODULE - III **15**

Polymorphism and Files: Virtual base classes – Abstract classes – Constructors in derived class – Pointers- Pointers to objects – this pointer – Pointers to derived classes – Virtual functions – Pure virtual functions- Managing console I/O operations - Working with files: 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 – Error handling during file operations – Command line arguments-Templates: Class templates–Class templates with multiple parameters function templates-function templates with multiple parameters- overloading of template functions – member function templates-exception handling.

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOK

1. Balagurusamy, E., “Object Oriented Programming with C++”, Fourth Edition, Tata McGraw Hill Pub. Co., New Delhi, 2008.

REFERENCE BOOKS

1. Lafore, Robert., “Object Oriented Programming in Microsoft C++”, Galgotia Publications, New Delhi, 1999.
2. Kamthane., “Object Oriented Programming with ANSI and Turbo C++”, Pearson Education, Delhi, 2003.
3. Deitel and Deitel, “C++ How to Program”, Sixth Edition, PHI Press, 2009.

11BC204 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Computer Technology and Information Technology)

3 1 0 4

Objective:

- To provide a firm foundation in the study of Electrical Engineering.
- To introduce the basic circuit and logic concepts of electrical and electronics engineering.
- To impart a basic knowledge on principles of electrical machines for controlling applications.

MODULE – I **15**

Fundamentals of Electrical and Electronics Circuits: Fundamentals of Electricity: Charge, Current, Electric potential, Potential Difference, circuit elements, Electric Power, Electric Energy. Semiconductor – Intrinsic & Extrinsic Semiconductor – theory of PN junction diode , Zener diode – VI Characteristics.

Fundamentals of DC circuits: Ohm's law, Power law, Kirchoff's laws- Kirchoff's current law, Kirchoff's voltage law. Resistance in Series, Resistance in parallel, Series Parallel circuits. Mesh loop analysis.

MODULE - II **15**

AC Circuits: Fundamentals of AC circuits: Sinusoidal alternating Voltage and Current-Equation, waveform ,Cycle, Frequency, RMS or Effective Value and Average value, Form factor, Peak factor.

Single phase AC circuits – Impedance, Power and Power Factor – R, L ,C circuits - Series RL, Series RC, Series RLC circuits – Effects of series resonance – Resonance curve – Q factor – Bandwidth of series resonant circuit – problems.

MODULE – III **15**

Electrical Machines [Qualitative Analysis only] and DC Power Supply: Parts, Principle of Operation, Basic Equation and Application of –DC Generators (EMF equation), Single Phase Transformer and Induction Motors.

Introduction to DC Power supply (Block diagram) – Working principle of Half wave rectifier and Full wave rectifier – Centre tap and Bridge rectifier. Filter-Need-Types. Voltage regulator-Need-Types. Introduction to SMPS, UPS (Block diagram).

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOKS

1. Metha, V.K., Rohit Metha, "Principles of Electrical Engineering", S.Chand & company Ltd, New Delhi.
2. Sedha R.S., "Applied Electronics", First Edition, S.Chand & Company Ltd., New Delhi, 2001.

REFERENCE BOOKS

1. Theraja B.L., "Fundamentals of Electrical Engineering and Electronics", S.Chand & Co, New Delhi.
2. Theraja B.L., and Theraja, A.K., "A Text Book of Electrical Technology, Volume II: AC & DC Machines", S. Chand and Company Ltd., New Delhi, 2005.
3. Kothari, D.P. and Nagrath I.J., "Basic Electrical Engineering", Second Edition, Tata McGraw-Hill, New Delhi, 2002.

11BC205 DATA STRUCTURES

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To provide insight on the properties and applications of various data structures.
- To compare different implementations of data structures and to recognize the advantages and disadvantages of the different implementations.
- To impart knowledge on various sorting algorithms and compare its efficiency.

MODULE – I **15**

Arrays, Sorting and Searching: Linear Data Structures and their sequential storage representation: concepts and terminology – Storage structure for arrays – Structures and arrays of structures - Sorting and Searching – Sorting – Notation & Concepts – Selection Sort – Bubble Sort – Quick Sort – Heap Sort – Radix Sort – Searching Techniques: Sequential Search and Binary Search.

MODULE - II **15**

Stacks, Queues and Linked Lists: Stacks – Application: Recursion, Conversion of Infix to Postfix - Queues – Operations – Circular Queue – Priority Queue –Application : Simulation - Pointers and Linked Allocation – Linked Linear Lists : Operations , Doubly Linked Lists – Application: Addition of Polynomial.

MODULE – III **15**

Trees and Graphs: Definition and Concept – Binary tree Traversals - Storage Representation of Binary tree: Linked Storage – Threaded Storage - Application of Binary Tree: Manipulation of Arithmetic Expression - Graphs and their representation – Matrix representation of graph – Graph Traversal Techniques: Breadth first search – Depth first search – Spanning trees – Application: Program Evaluation and Review Technique (PERT).

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOK

1. Tremblay, J.P. and Soresen, P.G., "An Introduction to Data Structures with Applications", Second Edition, Tata McGraw Hill, New Delhi, Reprint 2010.

REFERENCE BOOKS

1. Lipschutz Seymour and Vijayalakshmi Pai G.A., "Data Structures", Tata McGraw-Hill, New Delhi, 2007.
2. ISRD Group, "Data Structures Using C", Tata McGraw Hill, New Delhi, 2007.
3. Balagurusamy, E., "C and Data Structures", Tata McGraw-Hill, New Delhi, 2002.

11BC206 OBJECT ORIENTED PROGRAMMING LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Simple Programs in C++
2. Implementation of Call by Value, Call by Address and Call by Reference
3. Create a Complex Number Class with all possible Operators
4. Implementation of Classes and Objects
5. Constructors and destructors
6. Operator Overloading and Function Overloading
7. Implementation of Inheritance
8. Implementation of Virtual Base Class
9. Implementation of Polymorphism
10. File Handling
11. Function Template

Case study:

Biggest Number, Factorial, Fibonacci, Swapping, Complex Number, Electricity Bill, Adding two numbers, Concatenating two strings, Mark sheet Preparation, Displaying different data types, Area of different shapes, Handling sequential file for I/O operations , Minimum value in an array.

11BC207 ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY

(Common to Computer Technology and Information Technology)

0 0 3 1

LIST OF EXPERIMENTS

1. Verification of Ohm's Law
2. Verification of Krichoff's Law
3. Single phase Power Measurement Using Voltmeter and Ammeter
4. Load Test on Single Phase Transformer
5. Open circuit & Load Test on D.C. Shunt Generator
6. Load Test on 1 Phase induction Motor
7. Load Test on 3 Phase induction Motor
8. VI characteristics of PN junction diode
9. VI characteristics of Zener diode
10. Voltage Regulator
11. Study of SMPS
12. Study of Half Wave and Full Wave Rectifiers

11BC208 DATA STRUCTURES LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Array Operations
2. Selection sort
3. Quick sort
4. Heap sort
5. Sequential search.
6. Binary search
7. Stack Operations using Arrays
8. Applications of Stack – Infix to postfix
9. Queue Operations using Arrays
10. Circular Queue using Arrays
11. Singly linked list Operations
12. Doubly linked list Operations
13. Circular Linked List Operations
14. Operation on binary trees.

11BC301 NUMERICAL METHODS

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective: To provide the wide range of numerical methods for solving varies kind of problems which give an opportunity to develop skills in soft computing.

MODULE – I **15**

Numerical Solutions of Nonlinear and Linear Equations: Numerical Solution of Algebraic and Transcendental Equations: Method of Bisection-Method of False Position – Fixed point iterative Method-Newton Raphson Method.

Simultaneous Linear Non Homogeneous Algebraic Equations: Gauss Elimination Method-Gauss Jordan Method- Gauss Jacobi Method-Gauss Seidel Method.

MODULE - II **15**

Interpolation, Numerical Differentiation and Integration: Interpolation with equal intervals: Gregory- Newton Forward Interpolation formula-Gregory- Newton Backward Interpolation formula-Stirling's Formula-Interpolation with unequal Intervals: Lagrange's Interpolation Formula- Newton's Divided Difference Formula.

Numerical Differentiation and Integration: Newton's Forward Difference formula- Newton's Backward Difference formula - Trapezoidal Rule- Simpson's 1/3 Rule -Simpson's 3/8 Rule.

MODULE – III **15**

Numerical Solution of Ordinary and Partial Differential Equations: Taylors Series of first order differential equation- Modified Euler's Method –Fourth Order Runge Kutta Method for First order Differential equations- Classification of partial differential equations of the second order –Solution of Laplace equation- Solution of Heat equation: Schmidt Method -Crank-Nicolson Method.

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOK

1. Thangaraj. P., "Computer-Oriented Numerical Methods", Prentice Hall of India Private Ltd., New Delhi, 2008.

REFERENCE BOOKS

1. Sastry, S.S., "Introductory Methods of Numerical Analysis", Third Edition, Prentice Hall of India Private Ltd., New Delhi, 1999.
2. Kandasamy, P., Thilagavathy. K and Gunavathy, K., "Numerical Methods", S.Chand and Company, New Delhi, 2003.
3. Balagurusamy, E., "Numerical Methods", Tata McGraw Hill Publications Company, New Delhi, 1999.

11BC302 JAVA PROGRAMMING

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To impart knowledge and develop skills required to solve real world problems using Java Language constructs.
- To introduce the fundamentals of the Java language, object oriented features and the structure of Java applets and applications.

MODULE – I **15**

Introduction to Java, Classes, Arrays and Strings: Java Features – comparison of Java with C and C++ - Java and Internet – Java Environment – Java Program structure – Java Tokens – Implementing a Java Program – Java Virtual Machine – Constants – Variables – Data Types – Scope of Variables – Type casting – Operators and expressions – Decision Making and Branching - Decision Making and Looping-Defining a class – Constructors – Method overloading – static Members – Nesting of Methods – Overriding methods – Final Classes – Abstract Class – Visibility control – Arrays- Strings – String Arrays – String Methods – String Buffer Class – Vectors – Wrapper Classes.

MODULE - II **15**

Inheritance, Interfaces, Packages and Multithreading,: Defining a subclass – Subclass constructor – Multilevel inheritance – Hierarchical Inheritance – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Java API Packages – creating a package – Accessing and Using a package – Adding a class to a package – Hiding Classes - Creating the Threads-Extending the Thread class – Thread Life cycle – Thread Exception – Thread priority – Synchronization – Runnable Interface.

MODULE – III **15**

Exception Handling, Files, Applet Programming and Collections:– Exceptions – Throwing own Exceptions – Concepts of streams – stream classes – Byte Stream Classes – Character stream Classes - Difference between Application and Applets – Applet Life cycle – creating an Executable Applet – Designing a Web Page – Adding Applet to HTML File – Passing Parameters to Applets, The Collection Interface : Queue Interface, Dequeue Interface, Generic Collections : The Enumeration, vector, stack, Dictionary, Hash table.

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOK

1. Balagurusamy. E., “Programming with Java – A Primer”, Third Edition, Tata McGraw Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Schildt, Herbert, “Java:The Complete Reference”, Seventh Edition, Tata McGraw Hill, New Delhi, 2006
2. Dietel and Dietel., “Java How to Program”, Prentice Hall, New Jersey, 1999.
3. Arnold, Ken., Gosling James and Holmes, David., “The Java Programming Language”, Fourth Edition, Pearson Education, New Delhi, 2005.

11BC303 COMPUTER ARCHITECTURE

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective: To illustrate the principles of computer organization and also hone the problem solving skills.

MODULE – I **15**

Basic Structure and Machine Instructions: Introduction-Functional units-Basic operational concepts-Bus Structures-Performance-Multiprocessors and Multicomputer - Machine Instructions: Numbers, Arithmetic Operations and Characters-Memory Locations and Addresses-Memory Operations-Instructions and Instruction Sequencing-Addressing Modes-Encoding of Machine Instructions.

MODULE - II **15**

Arithmetic Operations, Processing Unit and Pipelining: Addition and Subtraction of Signed Numbers-Design of Fast Adders-Multiplication-Division-Floating Point Numbers and Operations - Fundamental Concepts-Execution of a Complete Instruction-Multiple Bus Organization-Hardwired and Micro programmed Control-Pipelining: Concepts-Data and Instruction Hazards.

MODULE - III **15**

Memory Systems and Input/Output Organization: Basic Concepts-RAM and ROM - Memory Hierarchies - Cache Memories-Performance Considerations-Virtual Memories-Memory Management Requirements-Secondary Storage-Associative Memories - Introduction-Accessing I/O Devices-Interrupts-DMA-Buses- Case Study of one RISC and one CISC Processor.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Hamacher Carl, Vranesic Zvonko, and Zaky Safwat., "Computer Organization", Fifth Edition, McGraw Hill, New York, 2002.

REFERENCE BOOKS

1. Stallings, William, "Computer Organization and Architecture: Designing for Performance", Sixth Edition, Pearson Education, New Delhi, 2003.
2. Patterson, David A and Hennessy, John L., "Computer Organization and Design: The Hardware / Software Interface", Second Edition, Harcourt Asia, Morgan Kaufmann, Singapore, 2000.
3. Hayes, John P, "Computer Architecture and Organization", Third Edition, Tata McGraw-Hill, New Delhi, 2008.

11BC304 DATABASE MANAGEMENT SYSTEMS

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective: To develop background knowledge as well as core expertise in Database Management Systems.

MODULE – I **15**

Introduction: Introduction – Database VS File System – DBMS Architecture - View of Data – Data Models: E-R model– Basic Concepts – Constraints – Keys – Design Issues – ER Diagram – Weak Entity Sets – Extended ER-Database System Architecture- Relational Algebra: Fundamental Operations–Select-Project-Cartesian Product-Rename-Relational Calculus: Domain Relational Calculus-Tuple Relational Calculus.

MODULE - II **15**

Relational Databases and Relational Design: SQL: Data Definition-Basic Structure-Set operations-Aggregate Functions-Null values-Nested Sub queries-Complex Queries - Views-Modification of the Database - Joined Relations -Triggers-Assertions -MYSQL: Working with Data: Inserting, Updating, and Deleting Records-Retrieving Records-Copying, Importing, and Exporting Records-Relational Database Design: Functional dependency- Normal Forms: First Normal form-Second Normal Form-Third Normal Form-Boyce Codd Normal Form-Fourth Normal Form-Fifth Normal Form.

MODULE – III **15**

Transaction Management: Storage and File Structure: RAID-Transactions: Transaction Concept-Transaction State-Implementation of Atomicity and Durability-Concurrent Executions-Serializability-Recoverability-Testing for Serializability – Concurrency Control – Lock Based Protocols – Timestamp Based Protocols – Validation Based Protocols – Recovery system – Log Based Recovery.

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOKS

1. Silberschatz, Abraham, Korth, Henry F. and Sundarshan, S., "Database System Concepts", Sixth Edition, McGraw Hill, New York, 2011. (Module I, II & III)
2. Vikram Vaswani," My SQL: The complete Reference", Ninth reprint, Tata McGraw-Hill Edition, New Delhi, 2008. (Module II)

REFERENCE BOOKS

1. Date, C.J., "An Introduction to Database Systems", Seventh Edition, Pearson Education, New Delhi, 2002.
2. Elmasri, Remez, and Navathe, Shamkant B., "Fundamentals of Database Systems", Fourth Edition, Pearson Education, New Delhi, 2004.
3. Raghu Ramakrishnan, and Johhannes Gehrke, "Database Management Systems", Third Edition, Tata McGraw Hill, New Delhi, 2008.

11BI301 PRINCIPLES OF DATA COMMUNICATION

3 0 0 3

Objective:

- To provide detailed knowledge about the Analog and Digital Data Communication.
- To understand the data transmission and encoding
- To understand the concept of Multiplexing

MODULE – I **15**

Basics of Communication and Information Theory: Basics of AM, FM and PM Block Diagram, Concepts of AM, FM modulators and demodulators - Pulse modulation systems - Pulse amplitude modulation – Introduction to sampling and sampling theorem.

MODULE - II **15**

Coding, Data Transmission Concepts: Introduction to coding - Coding and Decoding - Burst error correction codes - Convolution coding and decoding - Concepts and Terminology- Analog and Digital transmission, Transmission impairments - Transmission media and its types.

MODULE - III **15**

Data Encoding and Data Link Control: Digital data Analog signals - ASK, FSK, PSK, QPSK - PCM - Data Link Control Protocols: Flow control, Error control – High-Level Data Link Control(HDLC), Multiplexing: Frequency Division Multiplexing-Synchronous Time Division Multiplexing-Statistical Time Division Multiplexing.

TOTAL : 45

TEXT BOOKS

1. Wayne Tomasi, "Electronic Communications Systems", Fifth Edition, Pearson Education, Dorling Kindersley (India) Pvt Ltd, 2009. (MODULE I & III)
2. Stallings William, "Data and Computer Communications", Eighth Edition, Pearson Education, New Delhi, 2007. (MODULE II & III)

REFERENCE BOOKS

1. Taub Herbert., Schilling Donald L and Saha Goutam., "Principle of Communication Systems", Third Edition, Tata McGraw Hill, New Delhi, 2008.
2. Gupta Prakash C., "Data Communications", Prentice Hall of India, New Delhi, 2002.
3. Forouzan, Behrouz A., "Data Communication and Networking", Fourth Edition, Tata McGraw-Hill, New Delhi, 2007.

11BC306 JAVA PROGRAMMING LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

Java Programming

1. Classes and Objects
2. Command Line Arguments
3. Constructors
4. Method Overloading
5. Method Overriding
6. Abstract and Static Methods
7. Inheritance
8. Interfaces and Packages
9. Multithreading
10. Exception Handling
11. Applets

Case Study: Determination of odd and even numbers – Sorting and Searching - Complex number manipulation – Area calculation for Geometrical Shapes – Payroll preparation – Mark list preparation – Producer consumer problem – Voters eligibility – Banner Creation - Simple calculator.

11BC307 DATABASE MANAGEMENT SYSTEMS LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Simple DDL and DML
2. Constraints and Views
3. Sequences
4. Nested Queries
5. Group by Functions / HAVING Clause
6. PL/SQL Functions
7. PL/SQL Procedures
8. Triggers
9. Cursors
10. PL/SQL Packages / Constants
11. Forms and Menus
12. Reports

Case Study: Banking System, Inventory System, Student Information System, Library Management System.

11BC308 COMMUNICATION SKILLS AND CAREER DEVELOPMENT LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Listening skills**:**

   Listening to instructional software packages in the communication laboratory, using them, understanding the mechanics of language like grammar, listening to native speakers' presentation, developing oral communication by imitating the model dialogues, taking notes on key aspects like pronunciation accent and meaning in context, developing sentence skills - listening for specific information – listening to improve pronunciation and imitating the native speakers.
2. Reading comprehension and vocabulary**:**

   Reading for getting information and understanding: scanning, skimming and identifying topic sentences – reading for gaining knowledge, looking for transitions, understanding the attitude of the writer, learning to identify chunks of relevant information, arguing for points of view, improving spelling, recognizing new words in context and guessing their meanings etc.,
3. Speaking**:**

   Group discussion(General and Technical Topics): verbal and non-verbal communication; speaking on situational topics – maintaining eye contact, speaking audibly, clearly and with confidence and talking to the point and answering trouble shooting questions.
4. Writing skills:

   Writing job applications**:** resume, applications for jobs, making complaint letters-

   Projects: report writing-editing and proof reading-research paper, and translating numerical data from charts and diagrams into verbal communication.
5. Presentation Skills

   Oral Presentation on a topic for five minutes
6. Interview Skills

Communication Software Package:

1. Young India Software
   a. Tense Buster Intermediate
   b. Tense Buster Advanced
   c. Issues in English
2. Globarena Software
   a. Media for Group Discussion
   b. Media for Speaking

11BC401 OPERATIONS RESEARCH

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To enhance the knowledge of queuing theory, inventory and shortest route problems.
- To develop a complete procedure for solving different kinds of programming problems.

MODULE – I **15**

Linear Programming: Mathematical formulation of Linear programming problem – Graphical solution – Simplex method – Artificial variable technique – Big M method – Two phase method - Simple problems.

MODULE - II **15**

Application of Linear Programming and Network Models: Transportation Model – Initial Basic Feasible solution – North west Corner Rule – Least cost method – Vogel's approximation method: Balanced and Unbalanced problems – Assignment model: Balanced problems – Unbalanced problems. Shortest Route Problem using Floyd's Algorithm - Critical path computation- PERT (without Crashing).

MODULE – III **15**

Inventory Models and Game Theory: Deterministic Inventory Model – Static and Dynamic EOQ Models – with or without shortage – Probabilistic Inventory model – Discrete and continuous type - Simple problems. - Two person zero-Sum Games-Maxmin- Minmax Principle-Saddle Point and Value of the Game-Games without Saddle points, Mixed Strategies-Matrix oddment method for n x n games-Dominance Property-Graphical method for 2 x n or m x 2 games.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Sundaresan, V., Ganapathy Subramanian, K.S. and Ganesan, K., "Resource Management Techniques", A. R. Publications, Arpakkam, 2007.

REFERENCE BOOKS

1. Sharma, J.K., "Operations Research: Theory and Application", Macmillan, London, 2003.
2. Kantiswarup, Gupta P. K., and Man Mohan., "Operations Research", Sultan Chand & Sons, New Delhi,1999.
3. Taha, H.A., "Operations Research: an Introduction", Prentice Hall of India, New Delhi, 2002.

11BI401 COMPUTER GRAPHICS AND MULTIMEDIA

3 1 0 4

Objective:

- To study the graphics techniques and algorithms.
- To learn the basic concepts of Multimedia.
- To know the methodology of audio, video, images and text.
- To develop skills in multimedia Hardware and Software.

MODULE – I **15**

2D Primitives & 3D Concepts: Output primitives: Line, Circle and Ellipse drawing algorithms-Two dimensional geometric transformations – Basic Transformations-Matrix Representations-Composite Transformations-Other Transformations– Clipping operations: Point, Line, Polygon, Curve and Text clipping algorithms- Three Dimensional Concepts: Parallel Projection-Perspective Projection-Depth Cueing-Visible line and Surface identification-Surface Rendering-Exploded and Cutaway Views-Three Dimensional and Stereoscopic Views.

MODULE – II **15**

Multimedia: What is Multimedia-Multimedia Skills-Text:Using text in Multimedia-Computers and Text-Font Editing and Design Tools-Hypermedia and Hypertext-Sound:Digital Audio-Making MIDI Audio-MIDI Vs Digital Audio-Images:Making Still Images-Color-Image File Formats-Animation:Power of Motion-Principles of animation-Animation by Computer-Making Animations that work-Video:Analog Display Standards-Digital Display Standards-Digital Video-Video Recording and Tape Formats-Shooting and Editing Video.

MODULE – III **15**

Multimedia Hardware and Software: Hardware:Macintosh Vs Windows-Memory and Storage devices-Input devices-Output Hardware-Communication Devices-Basic Software Tools: Text editing and Word Processing Tools-Painting and Drawing Tools-3-D Modeling and Animation Tools-Image Editing Tools –Sound Editing Tools-Animation,Video and Digital Movie Tools-The Internet and how it works:Internetworking-Connections-Internet Services-Tools for the World Wide Web-Designing for the World Wide Web.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

1. Hearn, Donald and Baker, M.Pauline., "Computer Graphics: C Version", Second Edition, Pearson Education, 2011.
2. Vaughan, Tay, "Multimedia: Making It Work", Seventh Edition, Tata McGraw-Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Steinmetz, Ralf and Nahrstedt, Klara., "Multimedia: Computing, Communications and Applications", Pearson Education, New Delhi, 2001.
2. Parekh, R., "Principles of Multimedia" Tata McGraw-Hill, New Delhi, 2006.
3. Ashok Banerji, Ananda Ghosh, "Multimedia Technologies", Tata McGraw-Hill, New Delhi, 2009.

11BC403 COMPUTER NETWORKS

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To impart the knowledge on various concepts of computer networks.
- To provide insight on the various layers and their functionality of network models

MODULE - I **15**

Introduction to Data Communication and Switching: Components-Data Flow- Networks-type of connection-Topology – Categories of networks-Internet-Protocol and Standards-Network models: Layered Tasks-OSI model-Layers in the OSI Model-TCP/IP Protocol Suite-Addressing-Transmission media: Guided Media - Unguided Media. Switching: Circuit Switched Networks –Datagram Networks – Virtual Circuit Networks – Structure of switch-Space of circuit switch-Crossbar switch – Multistage switch.

MODULE - II **15**

Direct Link Networks and Internetworking: Ethernet (802.3) –Physical properties-Access Protocol –Experience - Token Ring (802.5)-Token ring Media Access Control-Maintenance- FDDI – Wireless LAN: WiMax - Cellular Technologies - Internetworking – Simple Internetworking (IP) –Service model-Global addresses-ARP-ICMP-Virtual Networks and Tunnels-Routing-Distance Vector(RIP)-Link State (OSPF).

MODULE - III **15**

Global Internet and Application Layer: Subnetting-Classless Routing (CIDR) – Inter-domain Routing (BGP) - IPV6– Multicast: Multicast addresses-Multicast routing-DVMRP- Domain Name System: Namespace-Domain Name Space-Distribution of Name Space- DNS in the Internet-Resolution-Remote Logging-TELNET- Electronic Mail-Architecture-User Agent – Message Transfer agent- Message Access Agent – Web based Mail.

` Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

1. Forouzan, Behrouz A., “Data communication and Networking”, Fourth Edition, Tata McGraw-Hill, New Delhi, 2008.(Module-I and III)
2. Davie, Bruce S. and Peterson, Larry L., “Computer Networks”, Fourth Edition, Harcourt Asia, Morgan Kaufmann, Singapore, 2003. (Module –II and III)

REFERENCE BOOKS

1. Tanenbaum, Andrew S, “Computer Networks”, Fourth Edition, Prentice Hall of India, New Delhi, 2002.
2. Kurose, James F. and Ross, Keith W., “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, New Delhi, 2003.
3. Stallings, William, “Data and Computer Communication”, Eighth Edition, Pearson Education, New Delhi, 2007.

11BC404 OPERATING SYSTEMS

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective :

To demystify the internals of the operating system by using the step by step approach of going from the very basics to much advanced concepts.

MODULE – I **15**

Overview of Operating System and Process Management: Main frame Systems - Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real Time systems – Hand held Systems, Operating Systems Structures: System Components – Operating System Services - System calls – Proces Concepts –Process Sheduling – operation on process – co-operating process – Inter process communication – Threads: Multithreading models.

MODULE - II **15**

CPU Scheduling, Process Synchronization and Deadlock: CPU scheduling: Basic Concepts – Scheduling algorithms - Process synchronization: The Critical Section Problem – Synchronization Hardware - Semaphores – Classical problem of Synchronization–Deadlock: Deadlock Characterization - Methods for handling Deadlocks - Deadlock Prevention – Deadlock Avoidance - Deadlock Detection – Recovery from Deadlock.

MODULE - III **15**

Memory Management and File Systems: Background – Swapping - Contiguous Memory Allocation - Paging - Segmentation – Segmentation with paging - Virtual Memory: Demand paging - Page Replacement – Thrashing - File Concepts - Access methods - Directory Structure - File Protection - File System Implementation: File System Structure and Implementation – Directory Implementation – Allocation methods - Free Space Management – Mass-Storage Structure: Disk Structure – Disk Scheduling.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Silberschatz, Abraham., Galvin, Peter Baer and Gagne, Greg, “Operating System Concepts”, Sixth Edition, John Wiley & Sons, Singapore, 2007.

REFERENCE BOOKS

1. Tanenbaum, A S and Woodhull, A S., “Operating Systems, Design and Implementation”, Second Edition, Pearson Education, New Delhi, 2002.
2. Deitel, H.M., “Operating Systems”, Second Edition, Pearson Education, New Delhi, 2002.
3. Stallings, William, “Operating Systems: Internals and Design Principles”, Sixth Edition, Prentice Hall of India, 2008.

11BI402 COMPUTER GRAPHICS AND MULTIMEDIA LABORATORY

0 0 3 1

LIST OF EXPERIMENTS /EXERCISES

1. To implement Bresenham's algorithms for Line drawing
2. To implement Bresenham's algorithms for Circle drawing
3. To perform 2D Transformations such as translation, rotation, scaling, reflection and sharing.
4. To implement Cohen-Sutherland 2D clipping and window-viewport mapping
5. Using Adobe's Photoshop implement the following effects like Feather, Extrude, Blur, Emboss and Liquify effects on an Image.
6. To implement the Layer technology using Photoshop and Macromedia Flash
7. To Perform Image Morphing using Adobe's Photoshop and Macromedia Flash. between color models.
8. Presentation using Macromedia Flash.
9. To Create an advertisement using Photoshop.
10. Perform basic operations on an Image using Image Editing Software.

11BC406 NETWORKS LABORATORY

(Common to Computer Technology and Information Technology)

0 0 3 1

LIST OF EXPERIMENTS

1. Write a java program to implement URL.
2. Write a java program to implement echo.
3. Write a java program to implement remote command execution.
4. Write a java program to implement TCP/IP client sockets.
5. Develop an application for transferring files over the port.
6. Develop a Client – Server application for chat.
7. Develop a client /server servlet programming
8. Write a java program to implement ARP.
9. Write a java program to implement RARP.
10. Write a java program to implement Dijkstra's algorithm
11. Write a Program to implement Remote Procedure call under Client / Server Environment
12. Write a Program using ping command to check the connectivity

11BC407 OPERATING SYSTEMS LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Basic UNIX Commands.
2. Shell programming :
   Command Syntax, Writing Simple Functions, Basic Tests, Loops, Patterns, Expansions, Substitutions
3. Write programs using the following system calls of UNIX operating system: fork, exec, getpid, exit, wait, close, stat, opendir, readdir
4. Write programs using the I/O system calls of UNIX operating system (open, read, write, etc)
5. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS. Compute and print the average waiting time and average turnaround time.
6. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for SJF. Compute and print the average waiting time and average turnaround time.
7. Implement the page Replacement Algorithms using FIFO
8. Implement the page Replacement Algorithms using LRU
9. Implement Interprocess Communication using Semaphores
10. Implement Interprocess Communication using Pipes and Message Queues
11. File systems
12. Implement producer-consumer problem.

11BI501 MOBILE COMPUTING

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To learn the basics of Wireless Communication Technologies.
- To study the working principles of Wireless LAN and its standards.
- To build working skills in Wireless Application Protocols and Applications.

MODULE - I **15**

Introduction: Applications – Simplified Reference Model – Wireless Transmissions: Frequencies for radio transmission – Signals – Antennas - Signal Propagation – Multiplexing – Spread Spectrum – Medium Access Control: Motivation for a specialized MAC-SDMA-FDMA-TDMA-CDMA– Comparison.

MODULE - II **15**

Telecommunication Systems: GSM – Mobile services-System Architecture – Radio interface Protocols – Handover –Localization and calling- Handover- Security – New data services- Satellite Systems: Applications-Basics-Routing-Localization-Handover-Wireless LAN: Infrared vs Radio transmission – Infrastructure and ad-hoc network - IEEE 802.11-System architecture-Protocol architecture-Physical layer-Medium access control layer-MAC management – 802.11b-802.11a – Bluetooth .

MODULE - III **15**

Mobile IP and Wireless Application Protocol: Mobile Network layer: Mobile IP-Goals – Assumptions and requirements- Entities and terminology- IP Packet Delivery – Agent discovery – Registration – Tunneling and Encapsulation – Optimization - Reverse Tunneling –Mobile Adhoc Networks: Routing Strategies - Wireless Application Protocol (WAP): Architecture – Wireless datagram protocol- Wireless transport layer security – Wireless transaction protocol – Wireless session protocol – Wireless application environment – WML Script – Wireless telephony application.

TOTAL : 45

TEXT BOOK

1. Schiller, Jochen., “Mobile Communications”, Pearson Education, Delhi, 2009.

REFERENCE BOOKS

1. Lee, William C.Y., “Mobile Cellular Telecommunications”, Second Edition, McGraw-Hill, New York, 2006.
2. Pahlavan, Kaveh and Krishnamoorthy, Prasanth., “Principles of Wireless Networks”, PHI / Pearson Education, New Delhi, 2003.
3. Stallings, William., “Wireless Communications and Networks”, PHI/Pearson Education, 2002.

11BC501 WEB TECHNOLOGY

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective :

- To include knowledge about web technological concepts and functioning Internet.
- To explore the programming in web using HTML, XML and Java Script.
- To introduce the server side programming technologies such as CGI,Servlets and ASP.NET.

MODULE – I **15**

WWW, HTTP, TELNET, **JAVASCRIPT:** Introduction-Brief History of WWW - The Basics of WWW and Browsing – HTML - Formatting tags - Creating links – Frames – Tables – Lists – Forms – Images – Style sheets - Web Browser Architecture - Common Gateway Interface - Remote Login - Javascript.

MODULE - II **15**

ASP.NET &JAVA WEB TECHNOLOGIES: Introduction - Popular web Technologies - What is ASP.NET - An overview of the .NET Framework - ASP.NET Details - Server controls and Web Controls - Validation Controls - Java Servlets - Java Server Pages - Apache struts - Java Server Faces - Enterprise Java Beans - Java applets - Life cycle of Java applets.

MODULE - III **15**

XML, WEBSERVICES AND MIDDLEWARE: XML - XML versus HTML - Electronic Data Exchange - XML Terminology - Introduction to DTD - Document Type Declaration - Element Type Declaration - Attribute Declaration - Limitations of DTDs - Introduction to schema - Extensible Stylesheet Language Transformation - Middleware concepts – CORBA - Java RMI - Microsoft Distributed Component Object Model - Web Services.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Achyut S Godbole and Atul Kahate, "Web Technologies: TCP/IP, Architecture, and Java Programming", Second Edition, Tata McGraw-Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Xavier C., "World Wide Web Design with HTML", Tata McGraw-Hill, New Delhi, 2008.
2. Powers. Shelly, et al., "Dynamic Web Publishing", Second Edition, TechMedia, New Delhi, 2006.
3. Deitel P.J. and Deitel H.M., "Internet and World Wide Web: How to Program", Fourth Edition, Prentice Hall of India, New Delhi, 2008.

11BC502 VISUAL PROGRAMMING

(Common to Computer Technology, Information Technology and Software Engineering)

3 1 0 4

Objective:

- To introduce the basic programming concepts in VB.NET.
- To explore the functionalities in Microsoft.Net windows application.
- To inculcate the knowledge and an ability to develop different applications with database connectivity.

MODULE – I **15**

Visual Basic .Net Programming: .Net Framework Architecture- Welcome to IDE: What is IDE - Selecting a form and the controls-Setting the properties of form and controls-Solution Explorer-Writing an Event Procedure-Hungarian notation- Standard toolbar-Setting Properties using the properties windows –Setting properties using Event Procedures -Visual basic .Net Programming Language: Variables and data types- Arithmetic Operators, Logical Operators, Conditional Operators - Programming Statements: If.. Then and If…Then… End If- Iteration Statements- Do-While Loop, Do Loop While, Do Until loop, Do Loop Until, For Next statement - Select Case – Arrays.

MODULE - II **15**

Functions and Object Oriented Programming: Visual basic .Net Programming Language : Import Statement- Functions-MsgBox function- InputBox() function - Structured Programming: What is Structured Programming- Event, Subroutines and function- Using Built-in functions: String Functions, Time and Date functions, Mathematical functions- Object Oriented Programming: What is Object Oriented Programming - Implementing OOP- Inheritance Overriding-Early Binding and Late Binding- Collections.

MODULE – III **15**

Files and Database: Working with files: Files - Classification of files – Handling Files and Folders using functions and classes- File Processing using Functions and Streams– Menus and Dialog Boxes - Advanced Techniques in Visual Basic .NET: Debugging a Program-Structured Exception Handling – Database connectivity: ADO .NET Architecture- Connection, Command, Dataset, Data Adapter.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Chavan, Shirish., "Visual Basic .NET", Pearson Education, Third Reprint, New Delhi, 2009.

REFERENCE BOOKS

1. Holzner, Steven., Howell, Bob and Howell, Robert, "Ado.net Programming In Visual Basic .net" Second Edition, Prentice Hall, New Jersey, 2003.
2. Schnedier, David I., " An Introduction to Programming using Visual Basic .NET", Fifth edition , PHI learning , 2005
3. Willis, Thearon and Newsome, Bryan., "Beginning Visual Basic 2005**",** Wiley India Private Limited, New Delhi, 2006.

11BC503 SOFTWARE ENGINEERING

(Common to Computer Technology and Information Technology)

3 1 0 4

Objective:

- To explore the steps involved in the development of the software.
- To impart knowledge on various design methodologies, testing and estimation techniques.

MODULE - I **15**

The Software Process and Requirement Analysis: Software Engineering - A Generic Process Model – Prescriptive Process Models- The waterfall Model – Incremental Process Models – Evolutionary Process Models – Understanding Requirements: Requirements Engineering – Establishing the Ground Work – Eliciting Requirements – Developing Use Cases – Building the Requirement Models – Negotiating Requirements – Validating Requirements – Requirements Modeling: Requirement Analysis- Scenario Based Modeling – UML Models – Data Modeling Concepts – Class-Based Modeling.

MODULE - II **15**

Design Engineering and Testing: Design Concepts: Design concepts – The Design Model – Estimation for Software Projects: Decomposition Techniques – Empirical Estimation Model – Software Testing Strategies: A strategic Approach – Strategic Issues – Test Strategy for Conventional software – Test strategy for Object Oriented Software - Validation Testing – System Testing – The Art of Debugging - Testing Conventional Applications: Software Testing Fundamentals - White Box Testing: Basis Path Testing – Control Structure Testing – Black Box Testing.

MODULE - III **15**

Software Project Management: Project Scheduling – Risk Management – Software Quality Assurance: Elements of SQA – SQA Tasks, Goals and Metrics – Process and Product Metrics: Software Measurement – Metrics for Software Quality – Software Process Improvement: What is SPI– The SPI Process- Software Configuration Management: SCM – SCM Repository – SCM Process.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOK

1. Pressman, Roger S., "Software Engineering- A practitioner's Approach", Seventh Edition, McGraw-Hill, New York, 2010.

REFERENCE BOOKS

1. Sommerville, Ian, "Software Engineering", Eighth Edition, Pearson Education Asia, Singapore, 2009.
2. Jalote, Pankaj., "An Integrated Approach to Software Engineering", Third Edition, Narosa Publishing House, New Delhi, 2005.
3 Ghezzi, et al, "Fundamentals of Software Engineering", Second Edition, Prentice Hall of India, New Delhi, 2009.

11BC505 WEB PROGRAMMING LABORATORY

(Common to Computer Technology, Information Technology and Software Engineering)

0 0 3 1

LIST OF EXPERIMENTS

1. Develop a HTML document which displays your name as ***<h1>*** heading and displays any four of your friends. Each of your friend's names must appear as hot text. When you click your friend's name, it must open another HTML document, which tells about your friend.
2. Write names of several countries in a paragraph and store it as an HTML document, world. HTML. Each country name must be a hot text. When you click India Image (for example), it must open the file and it should provide a brief introduction about India.
3. Design a HTML document describing you. Assign a suitable background design and background color and a text color.
4. Write a HTML document using ordered and unordered list.
5. Write a HTML document to print your class Time Table
6. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.
7. Develop a web page using image mapping and roll over effects.
8. Write a program using style sheet to create borders and to modify the font and text appearance.
9. Write a script to count the number of characters entered by user in a textbox and limit it to a particular number.
10. Create a form and validate it using java script.
11. Create a Dynamic Webpage using LAMP tool.
12. Write a servlet that calculates the factorial of a given number that has been submitted through a form.
13. Write a Cookie Program using ASP that counts the number of access to a web page.
14. Create a XML document for displaying the book details.
15. Create a XML document for displaying the bank details.

11BI502 VISUAL PROGRAMMING AND CASE TOOLS LABORATORY

0 0 3 1

LIST OF EXPERIMENTS

1. Working with controls such as label, text box, combo box. etc in VB .net
2. Electricity Bill Preparation using Constructor and Destructor
3. Area Calculation using Polymorphism
4. Student Mark sheet Preparation using Interfaces and Inheritance
5. Voters List using Exception handling
6. a)Problem Analysis and Project Planning:
   i. Study the problem and prepare the project scope, objective and infrastructure.
   ii. Prepare Gantt chart.
   b) Requirements Analysis:
   i. Identify the phases and individual modules of the project and describe them.
   ii. Prepare the software requirement specification.
   c) Design:
   Draw the Use-case diagram, Activity diagram, Class diagram, Sequence diagram.
   d) Implementation:
   Implement the project using VB.NET as frontend and Ms-Access as backend .
   e) Testing:
   Prepare test plan and Develop test case.

Perform the software engineering activities mentioned above (6.a to 6.e) for any of the two applications given below:
Banking System, Payroll Processing System, Library Management System, Online Quiz System

11BI503 MOBILE COMPUTING LABORATORY

0 0 3 1

LIST OF EXPERIMENTS

Using GSM Kit with Computer

1. C program to send the Message "Hello World" to a given Mobile number.
2. C Program to receive SMS and display it on the screen.
3. C Program to connect to a website and download a file using HTTP protocol through GPRS.
4. C Program to connect to a FTP server on the internet and download a file using FTP protocol through GPRS.
5. C Program to connect to a FTP server on the internet and upload a file using FTP protocol through GPRS.

Using GSM Kit with Microcontroller Kit

1. Send the message "Hello World" through SMS.
2. Display the message received through SMS on the 7 Segment Display on the MCU Kit.
3. Measuring a battery voltage using MCU (Micro Controller Unit)'s ADC and sending the result through SMS.
4. Turn on and off an LED on the MCU Kit by sending command SMS.
5. Connect to the Internet via GPRS and display the IP Address on the 7 segment display which was assigned to it.
6. Write a C program to read a SMS stored in the inbox and delete it.
7. Write a C program to answer an incoming call and disconnect the call.
8. Write a C program to display the IMEI number of the GSM modem.
9. Write a C program to find a number stored in phone book.
10. Write a C program to find the model, manufacturer and serial number of the GSM modem.
11. Write a C program to change the message storage memory and save the settings.
12. Write a C program to show the signal quality of the network used in GSM modem.
13. Write a C program to read and display the mobile operator name.
14. Write a C program to dial a voice call to a particular number.
15. Write a C program to find the service centre address.

11BI601 INFORMATION SECURITY

3 1 0 4

Objective:

To impart the knowledge on principles of cryptography and information security.

MODULE – I **15**

Introduction and Cryptography: Introduction- Security – Elements of information security - Security policy - Security techniques - Steps for better security - Category of Computer Security - Operational Model of network security - Basic network security terminology - Data Encryption Techniques -Symmetric Ciphers: Blowfish Encryption Algorithm- RC5- RC6-Comparison between RC6 and RC5- IDEA- Public Key Cryptosystems: Introduction-Public key encryption-The RSA Algorithm- Timing Attacks.

MODULE - II **15**

Authentication and System Security: Introduction- Authentication Methods: Password Based Authentication-Two factor Authentication- Biometric Authentication-Extensible Authentication-Kerberos- Intrusion: Intrusion detection –Intrusion Detection System-Anomaly Detection Systems-Misuse detection systems-Rule based intrusion detection-Distributed intrusion detection-Base rate fallacy- Firewalls: Packet Filters- Application Level and Circuit Level Gateways- Firewall Architectures- Trusted System- Access Control.

MODULE - III **15**

Logical and Physical Design: Blueprint for Security: Information Security Policy- Standards and Practices- ISO 17799/BS 7799- NIST Models- VISA International Security Model- Design of Security Architecture. Planning for Continuity. Security: continuity strategy-business impact analysis-Incident response planning-Incident reaction-Incident recovery - Security Technology: IDS- Scanning and Analysis Tools-Cryptography- Access Control Devices - Physical Security: Access control-Fire safety-Interception of data.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

1. Pachghare. V. K., "Cryptography and Information Security", Prentice Hall of India, New Delhi, 2009. (Module I and II)
2. Whitman, Michael E and Mattord, Herbert J., "Principles of Information Security", Vikas Publishing House, New Delhi, 2003. (Module III)

REFERENCE BOOKS

1. Merkow, Breithaupt, "Information Security", Pearson Education, New Delhi, 2007.
2. Pfleeger, Charles P. and Pfleeger, Shari Lawrence., "Security in Computing", Third Edition, Pearson Education, New Delhi, 2006.
3. Stallings, William., "Cryptography and Network Security: Principles and Practice", Fourth Edition, Prentice Hall of India, New Delhi, 2008.

11BI602 XML AND WEB SERVICES

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To understand various basic concepts of XML
- To understand the XML technology and its applications in the web world
- To learn how to build web services

MODULE – I **15**

XML Technology: Role of XML – XML and Web – XML Basics – SOAP – Web Services – Revolutions of XML- Advantages of XML over HTML, EDI, Databases – XML technology family – Structuring and Schemas – DTD – XML Schema – XML processing – DOM – SAX – presentation technologies –CSS- XSL – XFORMS – XHTML – VoiceXML – Transformation – XSLT – XLINK – XPATH – XQuery.

MODULE - II **15**

XML and SOAP: XML in practice-Vertical industry data descriptions-Configuration and Action-SOAP- Overview of SOAP – HTTP – XML-RPC-SOAP-Protocol – Message Structure – Intermediaries – Actors – Design Patterns and Faults – SOAP with Attachments.

MODULE – III **15**

Web service and XML security: Web service-Overview – Architecture – Key Technologies - UDDI – WSDL – ebXML – SOAP, Web Services and E-Commerce – Overview of .NET And J2EE. XML security-Security overview – Canonicalization – XML Security Framework – XML Encryption – XML Digital Signature – XKMS Structure – Guidelines for Signing XML Documents.

TOTAL: 45

TEXT BOOK

1. Frank. P. Coyle, “XML, Web Services and the Data Revolution”, Pearson Education, New Delhi, 2007.

REFERENCE BOOKS

1. Schmelzer, vandersypen, Bloomberg, et al, “XML and Web Services: unleashed”, pearson Education, New Delhi, 2008.
2. Nagappan, Ramesh, Skoczylas, Robert and Sriganesh, Patel, “Developing Java Web Services”, Wiley Publishing Inc, New York, 2004.
3. McGovern, etal, “Java Web Services Architecture”, Morgan Kaufmann Publishers, 2005.

11BI011 SERVICE ORIENTED ARCHITECTURE

(Common to Information Technology and Software Engineering)

3 0 0 3

Objective:

- To introduce the necessity of SOA
- To study the different technologies like WSDL, SOAP used in Web Services
- To impart knowledge on various case studies.

MODULE – I **15**

Introduction: Fundamental Service Oriented Architecture (SOA) – Common characteristics – Common misperceptions –Benefits of SOA – Pitfalls – Evolution of SOA – SOA timeline – Continuing evolution – roots of SOA- Activity Management And Composition**:** Web Services and Primitive SOA – Web Services framework – Services.

MODULE - II **15**

Web Services and Contemporary SOA: Web services and contemporary SOA (Part II): Addressing – reliable messaging - Correlation – policies - Principles Of Service Orientation: Service orientation and enterprise – Anatomy of SOA – Common principles – inter-relation between principles – Service layers – Service layer abstraction – Application service.

MODULE - III **15**

SOA Planning, Analysis and Design: Business service – Orchestration service – Agnostic service – Service layer configuration scenarios - SOA Design And Platforms: SOA delivery life cycle phases-introduction to SOA - Benefits of business centric SOA - Introduction to service oriented design – SOA support in J2EE – SOA support in .NET – Integration considerations – Case studies: RailCo Ltd., Transit Line Systems Inc. and the Oasis Car Wash.

TOTAL : 45

TEXT BOOK

1. Erl, Thomas, "Service Oriented Architecture (SOA): Concepts, Technology and Design", Pearson Education, New Delhi, 2005.

REFERENCE BOOKS

1. Erl Thomas, "SOA: Principles of Service Design", Pearson Education, New Delhi, 2008.
2. Lawla James P.K. and Barber H. Howell "Service Oriented Architecture: SOA strategy, Methodology and Technology", Auerbach Publications, 2008.
3. Micheal Rosen, Borris Lublinsky, Kavin T.Smith Marc. J.Balcer, "Applied SOA: Service Oriented Architecture and Design Strategies", Wiley Publications, 2008.

11BI012 FUNDAMENTALS OF DIGITAL SIGNAL PROCESSING

3 0 0 3

Objective:

- To introduce the concepts of signals and systems.
- To understand the fundamentals of z-transform.
- To impart the basics of discrete Fourier transforms.

MODULE – I **15**

Signals and Systems: Introduction-Signals, Systems and Signal Processing-Classification of Signals-Concept of Frequency in Continuous Time and Discrete Time Signals – Analog to Digital and Digital to Analog Conversion-Some Elementary Discrete Time Signals- Classification Discrete Time Signals. Discrete Time Systems.

MODULE - II **15**

Z-Transform: The Z-Transform-Properties of The Z-Transform-Rational Z-Transforms-Inversion of The Z-Transform-The One Sided Z-Transform-Analysis of Linear Time-Invariant Systems in The Z-Domain.

MODULE - III **15**

Discrete Fourier Transform: Introduction –The Discrete Fourier Transform –Properties of DFT – Linear Filtering Methods Based on The DFT- Efficient Computation of The DFT: Fast Fourier Transform Algorithms – Radix-2 and Radix-4 FFT Algorithms.

TOTAL :45

TEXT BOOK

1. Proakis, John G and Manolakis, Dimtris G., “Digital Signal Processing Principles, Algorithms and Application”, Fourth Edition, Pearson Education, Delhi, 2007.

REFERENCE BOOKS

1. Poornachandra S, and Sasikala B, “Digital Signal Processing”, Second Edition, Tata McGraw-Hill, New Delhi, 2008.
2. Mitra S.K., “Digital Signal Processing: A Computer Based Approach”, Tata McGraw-Hill, New Delhi, 1998.
3. Joyce Can De Vegte, “Fundamentals of Digital Signal Processing”, Prentice Hall, New Delhi, 2002.

11BC305 OBJECT ORIENTED ANALYSIS AND DESIGN

(Common to Computer Technology Information Technology and Software Engineering)

3 0 0 3

Objective: T**o** provide concept about object orientation and describe the development stages of object-oriented programming to manage the relationships and hierarchies between objects.

MODULE – I **15**

Object Basics and Object Modeling Technique: Introduction – An Object-Oriented Philosophy – Objects – Attributes – Object Behavior and Methods – Objects Respond to Messages – Encapsulation and Information Hiding – Class Hierarchy – Polymorphism – Object Relationships and Associations – Aggregations and Object Containment – Meta Classes – Object-Oriented System Development Life Cycle.- Rumbaugh Object Modeling Technique – The Booch Methodology – The Jacobson Methodologies

MODULE - II **15**

Object-Oriented Methodologies and Analysis: Patterns – Frameworks- The Unified Approach- Business Object Analysis – Use-Case Driven Object-Oriented Analysis – Business Process Modeling – Use-Case Model – Object Analysis – Noun Phrase Approach – Common Class Pattern Approach – Use-Case Driven Approach – Classes, Responsibilities and Collaborators.

MODULE - III **15**

Object Oriented Design and UML: Object-oriented Design Process – Object-Oriented Design Axioms – Corollaries – Design Patterns - Designing classes – Case study - Introduction – Static and Dynamic Models – Introduction to the Unified Modeling Language – UML Diagrams – UML Class Diagram – Use Case Diagram – UML Dynamic Modeling – Case study to inventory, sales and banking.

TOTAL : 45

TEXT BOOK

1. Bahrami, Ali, "Object Oriented Systems Development", Tata McGraw- Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Booch, Gredy, "Object Oriented Analysis and Design with Applications", Second Edition, Addision Wesley, New York, 1994.
2. Fowler, Martin, "UML Distilled", Second Edition, PHI/Pearson Education, New York, 2002.
3. Rumbaugh, James, Jacobson, Ivar, and Booch, Grady, "The Unified Modeling Language Reference Manual", Addision Wesley, New York, 1999.

11BC601 DATA WAREHOUSING AND DATA MINING

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To introduce the basic concepts and techniques of Data Mining.
- To gain experience of doing independent study and research.
- To build the skills on data warehousing with planning, designing and testing techniques.

MODULE – I **15**

Introduction to Data Mining and Data Preprocessing: Introduction: Data Mining Definition - Kind of Data-Data Mining Functionalities-Patterns-Classification of Data Mining Systems- Data Mining Task Primitives-Integration of a Data Mining System –Major Issues in Data Mining- Data Preprocessing : Data Cleaning- Data Integration and Transformation- Data Reduction.

MODULE - II **18**

Association, Classification and Clustering: Basic Concepts and a Road Map- Efficient and Scalable Frequent Itemset Mining Methods- Classification and Prediction: Issues Regarding Classification and Prediction-Classification by Decision Tree Induction - Decision Tree Induction – Attribute Selection Measure – Tree Pruning - Bayesian Classification-Baye's Theorem –Naive Bayesian Classification - Clusters Analysis: Types of Data in Cluster Analysis- Categorization of Major Clustering Methods: Partitioning Methods – K-Means - Hierarchical Methods-ROCK

MODULE - III **12**

Data Warehousing: Data Warehouse and OLAP Technology - Data Warehouse Definition - A Multidimensional Data Model- Data Warehouse Architecture-Steps for the Design and Construction of Data Warehouses – A Three-Tire Data Warehouse Architecture - Data Warehouse Back-End Tools and Utilities – Metadata Repository – Types of OLAP Servers - Data Warehouse Implementation – From Data Warehousing to Data Mining.

TOTAL : 45

TEXT BOOK

1. Han, Jiawei and Kamber, Micheline., "Data Mining: Concepts and Techniques", Second Edition Morgan Kaufmann Publishers, 2009.

REFERENCE BOOKS

1. Ian H. Witten and Eibe Frank, "Data Mining Practical Machine Learning Tools and Techniques", Elsevier Inc., 2005.
2. Rajeev Parida, "Principles and Implementation of Data warehousing", Firewall Media, 2006.
3. Berson, Alex and Smith, Stephen J., "Data Warehousing, Data Mining & OLAP", Tata McGraw- Hill, 2008.

11BS601 SOFTWARE PROJECT MANAGEMENT

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To construct the knowledge and skills in project managerial aspects.
- To create awareness on issues and problems in software development.
- To describe the basic steps that need to be carried out by a project management
- To focus on project monitoring and control issues

MODULE – I **15**

Introduction and Project Evaluation: Introduction to Software Project Management – Project Evaluation and Programme Management - An Overview of Project Planning – Selection of an Appropriate Project Approach.

MODULE – II **15**

Planning and Scheduling: Activity planning: Objectives of Activity planning – Project Schedules - Projects and Activities – Sequencing and Scheduling Activities - Network Planning Models – Formulating a Network Model – Time Dimensions – Forward and Backward pass – Identifying Critical Path – Activity Float - Identifying Critical Activities – Activity on Arrow Network - Risk Management: Introduction – Risk and Categories of Risk – A Framework for Dealing with Risk - Risk identification, Assessment, Planning and Management – Evaluating Risks – PERT Technique – Resource allocation.

MODULE – III **15**

Monitoring and Managing: Monitoring and Control – Managing Contracts – Managing People in Software Environments – Working in Teams- Introduction – Becoming a Team - Decision Making – Organization and Team Structures - Coordination Dependencies – Dispersed and Virtual Teams – Communication Genres – Communication Plans – Leadership

TOTAL: 45

TEXT BOOK

1. Hughes Bob., Cotterell Mike. and Mall Rajib., "Software Project Management", Fifth Edition, Tata McGraw- Hill, New Delhi, 2011.

REFERENCE BOOKS

1. Pressman, Roger S., "Software Engineering- A practitioner's Approach", Seventh Edition, McGraw-Hill, New York, 2010.
2. Gray Clifford F. and Larson Erik W., "Project Management, the Managerial Process", Third Edition, McGraw- Hill, New Delhi, 2008.
3. Jalote, Pankaj, "Software Project Management in Practice", Pearson Education, New Delhi, 2005

11BC012 CLOUD COMPUTING

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective :

- To understand how cloud computing works and examine which type of users can benefit
- To examine the practical benefits of cloud computing in different scenarios
- To learn about various web-based applications

MODULE – I **15**

Understanding Cloud Computing : Introduction – Cloud Computing - Collaboration to the cloud – Network is the Computer – Cloud Computing Today - Pros and Cons of Cloud Computing – Benefits – Developing Cloud Services – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Cloud Computing for Everyone - Cloud Computing for the Family - Cloud Computing for the Community - Cloud Computing for the Corporation.

MODULE – II **15**

Using Cloud Services: Collaborating on Calendars, Schedules and Task Management – Exploring online Calendar Applications – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management - Collaborating on Event Management – Understanding Event Management Applications – Exploring Event Management Applications - Collaborating on Contact Management – Understanding Contact Management and CRM – Exploring Contact Management and CRM Applications - Collaborating on Project Management – Understanding Project Management.

MODULE– III **15**

Web Based Processing and Storage : Collaborating on Word Processing – Working with Web-Based Word processing – Exploring Web-Based Word Processors - Collaborating on Spreadsheets – Working with Web-Based Spreadsheet – Exploring Web-Based Spreadsheets - Collaborating on Databases - Understanding Database Management – Exploring Web-Based Databases - Collaborating on Presentation – Preparing Presentation Online – Evaluating Web-Based Presentation Applications – Storing and Sharing Files and other Online Content – Understanding Cloud Storage – Evaluating Online File Storage and Sharing Services – Exploring Online Bookmarking Services.

TOTAL : 45

TEXT BOOK

1. Michael Miller., "Cloud Computing Web-Based Applications That Change the Way You Work and Collaborate Online ", First Edition, Pearson Education, 2009.

REFERENCE BOOKS

1. John Rhoton , " Cloud Computing Explained ", Second Edition, Recursive Press, 2010
2. Toby Velte, Anthony Velte, Robert Elsenpeter., "Cloud Computing, A Practical Approach", McGraw- Hill, 2010.
3. Barrie Sosinsky., "Cloud Computing Bible" , Wiley Publishing, 2011.

11BC013 ENTERPRISE RESOURCE PLANNING

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective

- To understand the basics and key implementation issues of ERP
- To know the business modules of ERP
- To be aware of some popular products in the area of ERP

MODULE – I **15**

Introduction: ERP: An Overview- Enterprise : An Overview- Benefits of ERP- ERP and Related Technologies- Business Process Reengineering (BPR)- Data Warehousing-Data Mining- Online Analytical Processing(OLAP)-Supply Chain Management(SCM).

MODULE- II **15**

ERP Implementation and the Business Modules: ERP Implementation Life cycle- Implementation Methodology-Hidden Costs-Organizing the Implementation- Vendors-Consultants and Users-Contracts with Vendors- Consultants and Employees- Project Management and Monitoring- Business modules in an ERP Package- Finance-Manufacturing-Human Resources- Plant Maintenance-Materials Management- Quality Management- Sales and Distribution.

MODULE- III **15**

The ERP Market and Future: ERP Market Place- SAP AG- People soft-Baan Company- JD Edwards World Solutions Company- Oracle Corporation- QAD- System Software Associates(SSA)-Turbo Charge the ERP System- Enterprise Integration Applications(EIA)- ERP and E-Commerce-ERP and Internet- Future Directions in ERP.

TOTAL :45

TEXT BOOK

1. Alexis Leon, “ERP Demystified”, Second Edition, Tata McGraw Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Brady Joseph A, Monk Ellen F, and Wagner Bret, “Concepts in Enterprise Resource Planning”, Thompson Course Technology, USA, 2001.
2. Vinod Garg Kumar and Venkitakrishnan N K, “Enterprise Resource Planning: Concepts and Practice”, Prentice Hall of India, New Delhi, 2003.
3. Fernandz Jose Antonio, “The SAP R /3 Hand book”, Tata McGraw Hill, New Delhi, 1998.

11BC014 PROFESSIONAL ETHICS AND HUMAN VALUES

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To enable the students to identify ethical and moral issues
- To provide a frame work for resolving ethical problems
- To educate the students regarding ethical issues relating to environment and globalization.

MODULE – I **15**

Introduction and Solving Moral Problems: Role Morality – What is a Profession – Professional ethics – Engineering Ethics as Preventive Ethics – Framing the Problem – Common Morality – Moral Justification – Analyzing a case – Factual Issues – Conceptual Issues - General and Specific Moral Problems-Introduction - Conflicting Values – Standpoints of the Judge and the Agent – Utilitarian Thinking – Three Utilitarian Approaches – the Ethics of Respect for Persons – Three Respect for Person Approaches – Convergence, Divergence and Creative Middle Ways.

MODULE- II **15**

Fundamental Issues: Generic Concerns: Responsible engineers- Honesty, Integrity and Reliability – Ways of Misusing the Truth – Why is Dishonesty Wrong? – Honesty on Campus – Integrity in Engineering Research and Testing – Integrity in the Use of Intellectual Property – Integrity and Client-Professional Confidentiality – Integrity and Expert Testimony – Integrity and Failure to Inform the Public – Conflicts of Interest – Risk, Safety, and Liability in Engineering: The Codes and Engineering Practice – Difficulties in Estimating Risk – Normalizing Deviance – The Expert's Approach to Acceptable Risk – Identifying and defining acceptable risk - The Layperson's Approach to Acceptable Risk – The government Regulator's Approach to Risk – The Engineer's Liability for Risk – Becoming a Responsible Engineer Regarding Risk.

MODULE- III **15**

Engineers Diverse Roles and Engineering Professionalism: Engineers as Employees: The codes and Employer – Employee Relationships – The Changing Legal Status of Employee Rights – The Manager-Engineer Relationship – Paradigmatic Engineering and Management Decisions – The Challenger Case – Loyalty: Uncritical and Critical – Responsible Organizational Disobedience – Implementing Professional Employee Rights – Engineers and the Environment - International Engineering Professionalism –Engineering professionalism and ethics: Issues Old and New .

TOTAL :45

TEXT BOOK

1. Harris, Charles E., Pritchard, Michael S. and Rabins, Michael J., "Engineering Ethics", Second Edition, Wadsworth Thomson Learning, Canada Latest Indian Edition,2000.

REFERENCE BOOKS

1. Fleddermann, Charles B., "Engineering Ethics", Second Edition, Pearson Education, New Delhi, 2004.
2. Martin, Mike W. and Schinzinger, Roland, "Ethics In Engineering", Third Edition, Tata McGrew-Hill Publishing, New Delhi, 2003.
3. Krishnaswamy, K., Thangaraj, K. and Karmegam, G., "Professional Ethics and Human Values", First Edition, R.K. Publishers, Coimbatore, 2005.

11BC015 ENVIRONMENTAL SCIENCE AND ENGINEERING

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

The student should be conversant with

- Precious Natural resources in the environment and conservation
- Ecosystem and bio-diversity
- Pollution and Wastewater treatment methods
- Role of a human being in maintaining a clean environment for the future generations
- Population explosion and Social Issues

MODULE – I **15**

Introduction to Environmental Studies and Natural Resources: Introduction to Environmental Science – Forest resources: Use and over-exploitation, deforestation, case studies. Water resources: Use and over-utilization of surface and ground water, Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems – effects of modern agriculture, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, case studies – Role of an individual in conservation of natural resources.

Ecosystems and Biodiversity: Concept of an ecosystem – Structural features – Functional attributes (Food chain and Food web only). Introduction to Biodiversity – Values of biodiversity – Hot-spots of biodiversity – Endangered and endemic species of India – In-situ and Ex-situ conservation of biodiversity.

MODULE – II **15**

Pollution: Definition – Causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Radioactive Pollution – role of an individual in prevention of pollution – Case studies.

Water Treatment methods: Treatment of Water for Domestic Supply (Screening, Aeration, Sedimentation with Coagulation, Filtration and Disinfection methods) – Break point chlorination – Sewage treatment (Primary, Secondary & Tertiary methods) – Methods of Sewage treatment by activated sludge process – Membrane Technology for wastewater treatment – Activated carbon in pollution abatement of wastewater.

MODULE- II **15**

Social Issues and the Environment: From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people – Case studies – Environmental ethics - Issues and possible solutions – Environment Production Act – Air (Prevention and control of pollution) Act – Water (Prevention and control of pollution) Act – Wildlife protection Act – Forest conservation Act – Issues involved in enforcement of environmental legislation – Public awareness.

Human Population and the Environment: Introduction – Population growth – Variation of population based on age structure – Variation among nations – Population explosion – Family welfare programme – Environment and human health – Human Rights – Value Education – HIV / AIDS – Women and Child welfare – Role of Information Technology in Environment and human health – Case studies.

TOTAL : 45

TEXT BOOK

1 P.N.Palanisamy et al, “Environmental Science”, First Edition: 2012, Pearson Education, New Delhi – 110 017.

REFERENCE BOOKS

1 Anubha Kaushik and Kaushik C P, “Environmental Science and Engineering”, Third Edition: 2008 (Reprint 2010), New Age International (P) Ltd, New Delhi.
2 B Uppal M M revised by S C Bhatia, “Environmental Chemistry”, Sixth Edition Khanna Publishers, New Delhi, 2002.
3 Masters. Gilbert M, “Introduction to Environmental Engineering and Science”, Second Edition, Pearson Education, New Delhi, 2004.

11BC016 COMPONENT BASED TECHNOLOGY

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective:

- To deal with fundamental properties of components, technology, architecture and middleware.
- To introduce in depth JAVA, CORBA and .Net Components.

MODULE – I **15**

Foundation: Terms and Concepts: Components - Objects – Modules – Interfaces - Components and interfaces: Callbacks and contracts - Examples of callbacks and contracts– Component architecture – Java, java beans , EJB and Java2: Overview and history of java component technologies - Java, the language –JavaBeans - Basic java services - Component variety - Advanced java services-JXTA and JINI.

MODULE - II **15**

CORBA and DCOM Technology: At the heart - The object request broker - Common object service specifications -CORBA component model - CORBA compliant implementations - CORBA facilities - Application objects - CORBA, UML, XML, and MDA – COM,OLE/ActiveX,Com+ and .NET CLR: The first fundamental wiring model – COM - COM object reuse - Interfaces and polymorphism - COM object creation and the COM library - Initializing objects, persistence, structured storage, monitors - From COM to distributed COM-Meta information and automation-other COM services - Compound documents and OLE - Contextual composition and services.

MODULE -III **15**

Component Frameworks and .Net Frameworks: Contributions of contextual component frameworks - Framework for contextual composition - Black box component framework - Black box and OLE – Portos –A hard real time component framework and its IDE - The .NET Framework – Assemblies – The .NET components - Common language frameworks.

TOTAL : 45

TEXT BOOK

1. Szyperski Clemens, Dominik Gruntz, Stephan Murer, "Component Software Beyond Object-Oriented Programming", Second Edition,Pearson Education, New Delhi, 2008.

REFERENCE BOOKS

1. Roman Ed, "Mastering Enterprise Java Beans", John Wiley & Sons Inc., New York, 1999.
2. Mowbray Thomas J and Ruh William A., "Inside CORBA", Pearson Education, New Delhi, 2003.
3. Freeze, Wayne S "Visual Basic Development Guide for COM & COM+", BPB Publication, New Delhi, 2001.

11BC017 E-COMMERCE

(Common to Computer Technology, Information Technology and Software Engineering)

3 0 0 3

Objective: To impart knowledge about the usage of Information Technology for business environment.

MODULE- I **15**

Ecommerce and Trade Cycle: Introduction – Electronic Commerce – Scope – Definition – Trade Cycle – Electronic Markets – Electronic Data Interchange – Internet Commerce – Business Strategy – Value Chain – Supply Chain – Inter Organizational Value Chains – Competitive Advantage – Competitive Strategy – Business Strategy – Existing Business Strategy – Strategy Formulation and Implementation Planning – E-commerce implementation – Evaluation-Case Study: Airline Reservation System.

MODULE - II **15**

B2B and B2C Electronic Commerce: Business to Business Electronic Commerce – Inter Organizational Transactions – Credit Transaction Trade Cycle – Variety of Transactions – Electronic Markets – Usage – Advantage and Disadvantages of Electronic Markets – Electronic Data Interchange – Definition – Benefits – EDI Security – EDI Maturity –Business to Consumer Electronic Commerce –Internet Components – Uses of the Internets – Elements of E-commerce – E-Visibility – E-Shop – Online Payments – A Web Site Evaluation Model.

MODULE - III **15**

E-Security, Legal and Ethical Issues: E-Security – Security in Cyberspace – Designing for Security – Kinds of Threats or Crimes – Virus – Security Protection and Recovery – Encryption – Internet Security Protocols and Standards –Legal and Ethical Issues – Major Threats to Ethics – Improving the Ethical Climate – Tort Law on the Internet – Taxation Issues – Legal Disputes on the Internet – Case Study: Internet Book Shop – Electronic Newspaper.

TOTAL : 45

TEXT BOOKS

1. Whitely, David., "E-Commerce, Strategy, Technologies and Applications", McGraw-Hill, Singapore, 2008.(Module I and II)
2. Awad, Elias M., "Electronic Commerce From Vision to Fulfillment", Third Edition, Prentice – Hall of India, Delhi, 2007.(Module III)

REFERENCE BOOKS

1. Kamesh K.Bajaj and Debjani Nag, "E-Commerce, The Cutting Edge of Business", Tata McGraw Hill Pub. Co., Delhi, 2000.
2. Kalakota, Ravi and Whinston, Andrew B., **"**Frontiers of Electronic Commerce", Pearson Education,2004
3. Laudon, Kenneth C and Traver, Carol G., "E-commerce: Business, Technology, Society", Pearson Education, 2005.

11BI013 SOFTWARE AGENT

3 0 0 3

Objective :

- To impart the knowledge of software agents and their use.
- To demonstrate the agent's communication, collaboration and the mobility.

MODULE– I **15**

Agent and user Experience: Introduction – People Interaction with Agents – Agents from Direct Manipulation to Delegation – Interface Agents: Metaphors with character – Designing Agents – Direct Manipulation versus Agents.

MODULE-II **15**

Agents for Learning in Intelligent Assistance: Agents for Information sharing and Coordination – Agents that Reduce Work and Information Overload – Life like Computer characters– Software Agents for Cooperative Learning – An Architecture of integrated Agents.

MODULE-III **15**

Agent Communication, Collaboration and Mobility: An Overview of Agent-Oriented Programming – KQML as an Agent Communication Language - An Agent-Based Framework for Interoperability –Communicative Actions for Artificial Agents – Mobile Agents.

TOTAL :45

TEXT BOOK

1. Bradshaw Jeffrey M, "Software Agents", First Edition, MIT Press, New Delhi, 2000.

REFERENCE BOOKS

1. Russel S. and Norvig P, "Artificial Intelligence: A Modern Approach", Second Edition, Prentice Hall, New Delhi, 2002.
2. Murch Richard and Johnson Tony, "Intelligent Software Agents", First Edition, Prentice Hall, New Delhi, 2000.
3. Bigus Joseph P and Bigus Jennifer, "Constructing Intelligent agents with Java: A Programmers Guide to Smarter Applications", First Edition, John Wiley & Sons Inc, New Delhi, 2000.

11BI014 ADVANCED JAVA PROGRAMMING

3 0 0 3

Objective :

- To impart the knowledge of networking and applets.
- To demonstrate data driven applications with JDBC API.
- To introduce the Web-based Applications using Servlets and JSP.

MODULE – I **15**

Networking, Applets and AWT: Networking: Networking Basics-The Networking classes and Interfaces- InetAddress- Inet4address and Inet6address- TCP/IP Client Sockets- URL- URL Connection- HTTP URL Connection- The URI class- Cookies- TCP/IP Server Sockets-Datagrams. The Applet Class: Two types of Applets- Applet Basics- Applet Architecture -An Applet Skeleton- Introducing the AWT: Working with windows, Graphics and text- Using AWT Controls-Layout Managers and Menus, Images.

MODULE - II **15**

RMI, Java Beans, Swing and Servlet: Remote Method Invocation: A Simple Client / Server application using RMI- Java Beans: Advantage of Java Beans-Introspection- Bound and Constrained Properties- Persistence- Customizers- The Java Beans API- A Bean Example. Introducing Swing- Exploring Swing. Servlets: The life cycle of a Servlet- Using Tomcat for Servlet Development- A simple Servlet- the Servlet API- the javax.servlet Package- Reading Servlet Parameters- The javax.servlet.http Package- Handling HTTP Requests and Responses- Using Cookies- Session Tracking.

MODULE - III **15**

JDBC and JSP: Accessing Database with JDBC: Introduction- Relational Databases- Relational Database Overview- SQL- Instructions to Install MYSQL and MYSQL Connector- Instructions on setting MYSQL User Account- Creating Database books in MYSQL- Manipulating Databases with JDBC- Stored Procedures- Row Set Interface-Wrap-Up. Java Server Pages: Introduction-JSP Overview- First Java Server Pages Example- Implicit Objects- Scripting- Standard Actions- Directives- Case study: Guest Book.

TOTAL :45

TEXT BOOKS

1. Schildt Herbert., “Java: The Complete Reference”, Seventh Edition, Tata McGraw-Hill, New Delhi, 2007 (MODULE I and II).
2. Deitel and Deitel., “Java: How to Program”, Sixth Edition, Prentice Hall India, New Delhi, 2005. (MODULE III)

REFERENCE BOOKS

1. Steflik Richard and Sridharan Prashant., “Advanced Java Networking”, Second Edition, Prentice Hall, New Delhi, 2000.
2. Horstmann Cay S. and Cornell Gary, “Core Java 2”, Volume II: Advanced Features, Seventh edition, Sun Microsystems, 2002.

3 Elliotte Rusty Harold., "Java Network Programming", O'Reilly publishers, 2000.

11BI015 MIDDLEWARE TECHNOLOGIES

3 0 0 3

Objective:

- To provide insight into the fundamental concept, principles, and state-of-the-art practice used in middleware technologies.
- To explore the features of CORBA and COM.

MODULE – I **15**

CORBA Basics and Standards: An Introduction to CORBA – CORBA interface Definition Language – Overview of CORBA- IDL – IDL basics – Conversion of OO Designs to IDL – IDL Guidelines - CORBA2 Standard – Overview of CORBA – Standard Object Model – The CORBA Architecture – CORBA Clients and Object Implementations – Interface and Implementation Repositories.

MODULE - II **15**

CORBA Services, Facilities and Domains: Overview of CORBA Services – The Information Management Services – Task Management CORBA services – System Management CORBA Services – Infrastructure CORBA Services - Overview of CORBA facilities – Horizontal CORBA facilities – Vertical CORBA facilities – Leveraging the OMG process.

MODULE - III **15**

COM: Components – Component Benefits – Component Requirements – COM – Interfaces Are Everything – Implementing a COM interface – Interface Theory – Behind the Interface – Component Reuse- Containment and aggregation – Implementing Containment – Implementing Aggregation – Aggregation and containment in the Real World.

TOTAL : 45

TEXT BOOK

1 Thomas J. Mowbray, William A. Ruh ,Inside CORBA: Distributed Object Standards and Applications, Pearson Education , First Impression 2006
2 Dale Rogerson ,Inside COM, Microsoft's Component Object Model , Microsoft Press, 2010

REFERENCE BOOKS

1. Jason Pritchard, "COM and CORBA side by side", Addison Wesley,2000
2. Dawna Travis Dewire., "Client Server Computing", McGraw-Hill, 2003.
3. Jeremy Rosenberger, "Teach yourself CORBA in 14 days", Tec media 2000

11BI016 WIRELESS TECHNOLOGY

(Common to Information Technology and Software Engineering)

3 0 0 3

Objectives:

- To impart the knowledge of wireless communication.
- To understand the techniques of medium access.
- To gain the knowledge of architecture and mobility management.

MODULE – I **15**

Introduction and Wireless Medium: Characteristics of the Wireless Medium – Introduction – Radio Propagation Mechanisms – Path Loss Modeling and Signal Coverage – Channel Measurement and Modeling Techniques – Simulation of the radio Channel-Applied Wireless Transmission Techniques-Short distance Base Band – UWB Pulse – Carrier modulated – Digital Cellular Transmissions – Spread spectrum Transmissions -High speed modems for spread spectrum Technology - Coding Techniques for wireless Transmissions-Wireless medium access alternatives.

MODULE - II **15**

Network Planning and Wireless Network Operation: Introduction to Wireless Networks – Wireless Network Topologies – Cellular Topology - Cell fundamentals - Capacity expansion techniques – Network Planning for CDMA Systems-Mobility Management – Radio Resources and Power Management – Security in Wireless Networks GSM and TDMA Technology - Introduction to GSM – Mechanisms to support a mobile environment – Communications in the infrastructure.

MODULE - III **15**

CDMA Technology and Wireless LAN: CDMA technology – Reference Architecture – IMT 2000 - Mobile Data Networks – Data oriented CDPD Network – GPRS and Higher data rates - SMS in GSM – Mobile Application Protocols- IEEE 802.11 WLAN – Physical layer – MAC sub layer – MAC Management Sub layer- Adhoc Networking – IEEE 802.15 – Home RF – Bluetooth – Wireless Geo location – Wireless Geo location System Architecture.

TOTAL : 45

TEXT BOOK

1. Pahlavan, Kaveh, and Krishnamurthy, Prashant., "Principles of Wireless Networks", Pearson Education, Delhi, 2003.

REFERENCE BOOKS

1. Stallings, William., "Wireless Communications and Networks", Pearson Education, Delhi, 2002.
2. Mallick Martyn., "Mobile and Wireless Design Essentials", John Wiley & Sons, Singapore, 2003.
3. Rappaport. Theodore S., "Wireless Communications: Principles and Practice", Pearson Education, Delhi, 2002.

11BI017 EMBEDDED SYSTEMS

3 0 0 3

Objective:

- To introduce the basics of embedded programming and Real Time Operating Systems.
- To explore the knowledge on hardware and software of embedded systems.

MODULE – I **15**

Introduction to Embedded Systems: Embedded Systems- Processor Embedded into a System- Embedded hardware units and devices in system – Embedded software - examples – Embedded systems on chip and the use of VLSI designed circuits. I/O types and examples – Synchronous – Serial communication devices – Parallel device ports – Wireless devices – Timer and counting devices – Watchdog timer – Real time clock – Networked Embedded system – Protocols – I^2C, USB, CAN and advanced I/O Serial high speed buses – ISA, PCI, PCI-X and HTTP, TCP, UDP, IP, IrDA, Bluetooth.

MODULE - II **15**

Embedded Programming in C, C++, Java: Software programming in Assembly Language (ALP) and in high level language C- C Program Elements Header and source files and preprocessor directives, Macros and Functions, Data types, data structures, modifiers, statements, loops, pointers. Object Oriented Programming- Embedded Programming in C++- Embedded Programming in Java. Program Model Concepts: Program models-DFG models- State Machine Programming models for Event Controlled Program flow- Modeling of multiprocessor Systems-UML Modeling.

MODULE – III **15**

Real Time Operating Systems: OS services- Process Management- Timer Functions-Event functions-Memory management- Device File and IO Subsystem Management- Interrupt Routines in RTOS Environment and Handling of Interrupt Source calls - RTOS-Basic design using an RTOS-RTOS Task Scheduling models, Interrupt latency and response of the tasks as performance Metrics-OS security Issues - Basic Functions and types of RTOSES-RTOS mCOS-II- RTOS Programming II-Windows CE.

TOTAL : 45

TEXT BOOK

1. Kamal, Raj., "Embedded Systems Architecture, Programming and Design", Second Edition, Tata McGraw Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Iyer, Sriram V and Gupta, Pankaj, "Embedded Real time Systems Programming", Tata McGraw Hill, New Delhi, 2008.
2. Simon, David E., "An Embedded Software Primer", Pearson Education Asia, Singapore, First Indian Reprint 2000.
3. Vahid Frank and Givargis Tony, "Embedded Systems Design: A unified Hardware / Software Introduction", John Wiley & Sons, New York, 2002.