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

**B.Sc. DEGREE IN COMPUTER 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

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**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** | | | |

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**B.Sc. DEGREE IN COMPUTER 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 |
| 11BC305 | Object Oriented Analysis and Design | 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** | | | |

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**B.Sc. DEGREE IN COMPUTER 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 |
| 11BC402 | Microprocessors and Interfacing | 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** | | | | | | | |
| 11BC405 | Microprocessors and Interfacing 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

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**B.Sc. DEGREE IN COMPUTER 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** | | | | | | | |
| 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 |
| 11BC504 | System Software | 3 | 0 | 0 | 3 | 50 | 50 | 100 |
| | Elective II | 3 | 0 | 0 | 3 | 50 | 50 | 100 |
| | | | | | | | | |
| | **PRACTICAL** | | | | | | | |
| 11BC505 | Web Programming Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 11BC506 | Visual Programming Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 11BC507 | Software Engineering and CASE Tools Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| | | | | **Total** | **21** | | | |

CA – Continuous Assessment, ESE – End Semester Examination

**KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE – 638 052**
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## B.Sc. DEGREE IN COMPUTER 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** | | | | | | | |
| 11BC601 | Data Warehousing and Data Mining | 3 | 0 | 0 | 3 | 50 | 50 | 100 |
| 11BC602 | Distributed Computing | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| | Elective III | 3 | 0 | 0 | 3 | 50 | 50 | 100 |
| | Elective IV | 3 | 0 | 0 | 3 | 50 | 50 | 100 |
| | | | | | | | | |
| | **PRACTICAL** | | | | | | | |
| 11BC603 | 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. COMPUTER TECHNOLOGY | | | | | | |
|---|---|---|---|---|---|---|
| **Course Code** | **Course Name** | **Pre-Requisite** | **L** | **T** | **P** | **C** |
| 11BI602 | XML and Web Services | Web Technology | 3 | 0 | 0 | 3 |
| 11BC011 | Management Information systems | Not Required | 3 | 0 | 0 | 3 |
| 11BC012 | Cloud Computing | Computer Networks | 3 | 0 | 0 | 3 |
| 11BI501 | Mobile 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 |
| 11BC018 | Network Security | Computer Networks | 3 | 0 | 0 | 3 |
| 11BS601 | Software Project Management | Software Engineering | 3 | 0 | 0 | 3 |
| **COMMON ELECTIVES** | | | | | | |
| 11BC019 | Compiler Design | System Software | 3 | 0 | 0 | 3 |
| 11BC020 | Extreme Programming | Programming in C | 3 | 0 | 0 | 3 |
| 11BC021 | Open Source Programming | Programming in C | 3 | 0 | 0 | 3 |
| 11BC022 | Parallel Processing | Computer Architecture | 3 | 0 | 0 | 3 |
| 11BC023 | Unix and Shell Programming | Operating Systems | 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 n$\theta$, cos n$\theta$ in terms of sin $\theta$ and cos $\theta$ - Expansion of sin $^n\theta$ , cos $^n\theta$ in terms of sines and cosines of multiples of $\theta$ - 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. Taxali.R.K, "PC Software for Windows Made Simple", Tata McGraw-Hill Ltd, New Delhi, 2000.
3. Rajaraman, "Fundamentals of Computers", 4th Edition, PHI Learning, 2008.
4. 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
11. Structures and Unions
12.Files

**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 $\nabla$, 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, 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, 2006.
2. Kandasamy, P., Thilagavathy. K and Gunavathy, K., "Numerical Methods", S.Chand and Company, New Delhi, 2008.
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.

## 11BC305 OBJECT ORIENTED ANALYSIS AND DESIGN

(Common to Computer 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.

## 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, 2009.

**REFERENCE BOOKS**

1. Sharma, J.K., "Operations Research: Theory and Application", Macmillan, London, 2009.
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, 2007.

## 11BC402 MICROPROCESSORS AND INTERFACING

(Common to Computer Technology and Software Engineering)

**3 1 0 4**

**Objective:**

- To introduce microprocessor and its applications.
- To promote knowledge about assembly language programming.
- To give awareness on microcontrollers and higher level processor.

**MODULE – I** **15**

**Architecture and Instruction Set:** Introduction – Comparison of Micro Computers, Mini Computers and Large Computers – The 8085 microprocessor – Architecture -Memory Interfacing - The 8085 Programming Model – Instruction Classification – Formats – Instruction Set – Assembly Language Programming.

**MODULE - II** **15**

**Interrupts and DMA:** Interfacing Input / Output Devices - Peripheral mapped I/O – Memory Mapped I/O - Interrupts - Hardware Vs Software Interrupts – Interrupt Controller – DMA Transfer – DMA Controller.

**MODULE – III** **15**

**Interfacing Devices and its Applications:** Programmable Interface Devices – 8255 DPI, 8279 Keyboard / Display Controller – Serial Input / Output and Data Communication – 8251 USART – 8253 Timer - Applications: ADC/DAC Interface – Traffic Light Controller – Bidirectional Transfer between two microcomputers.

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

**TEXT BOOK**

1. Gaonkar, Ramesh S., "Microprocessor Architecture, Programming and Applications with the 8085", Fifth Edition, Penram International Publishing (India) Pvt. Ltd., Mumbai, 2007.

**REFERENCE BOOKS**

1. Hall, Douglas V., "Microprocessors and Interfacing", Tata McGraw-Hill, New Delhi, 2005.
2. Mathur Adithya P, "Introduction to Microprocessor", Third Edition, Tata McGraw Hill, New Delhi, 2004.
3. Gilmore, "Microprocessor: Principles and Applications", Second Edition, Tata McGraw-Hill, New Delhi, 1997.

## 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.

## 11BC405 MICROPROCESSORS AND INTERFACING LABORATORY

(Common to Computer Technology and Software Engineering)

**0 0 3 1**

**LIST OF EXPERIMENTS**

**8085 MPU :**

1. Addition and Subtraction
    a. 8 bit addition.
    b. 16 bit addition.
    c. 8 bit subtraction.
    d. BCD subtraction.
2. Multiplication and Division
    a. 8 bit multiplication.
    b. 8 bit division.
3. Sorting and Searching
    a. Searching for an element in a array.
    b. Sorting in ascending order.
    c. Finding largest and smallest elements from an array.
    d. Reversing array elements.
    e. Block move.
    f. Sorting in descending order.
4. Code Conversion
    a. Binary to ASCII and ASCII to binary.
5. Applications
    a. Square of a single byte hex number.
    b. Traffic signal controller.

**Interfacing Experiments (Any Three)**

1. Write a C program to read a SMS stored in the inbox and delete it.
2. Write a C program to answer an incoming call and disconnect the call.
3. Write a C program to display the IMEI number of the GSM modem.
4. Write a C program to find a number stored in phone book.
5. Write a C program to find the model, manufacturer and serial number of the GSM modem.
6. Write a C program to change the message storage memory and save the settings.
7. Write a C program to show the signal quality of the network used in GSM modem.
8. Write a C program to read and display the mobile operator name.
9. Write a C program to dial a voice call to a particular number.
10. Write a C program to find the service centre address.

## 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.

## 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. Godbole, Achyut S and Kahate, Atul., "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.

## 11BC504 SYSTEM SOFTWARE

**3 0 0 3**

**Objective:**

- To introduce the basic concepts and techniques of system software
- To provide knowledge regarding the steps of translation process concepts
- To impart the knowledge of how linking and loading process is actually takes place.

**MODULE - I** **15**

**Language Processors and Assemblers:** Overview of Language Processors – Programming Languages and Language Processors - Language Processing Activities – Fundamentals of Language Processing – Symbol Tables - Assemblers – Elements of Assembly Language Programming – A simple Assembly Scheme – Pass Structure of Assemblers – Design of a Two Pass Assembler.

**MODULE - II** **15**

**Macro Processors, Linkers and Loaders:** Introduction to Macros and Macro Processors – Macro Definition and Call – Macro Expansion – Nested Macro Calls – Advanced Macro Facilities – Design of a Macro Preprocessor – Linkers - Introduction – Relocation and Linking Concepts – Design of a Linker – Self-Relocating Programs – Loaders-Software Tools – Definition - Software Tools for Programme Development – Editors – Debug Monitors – Programming Environments – User Interfaces.

**MODULE - III** **15**

**Parser, Compilers and Interpreters:** Programming Language Grammars - Scanning – Parsing – Language processor Development Tools – Compilers – Causes of a large semantic gap – binding and Binding times - Data Structures used in compilers - Scope rules - Memory Allocation – Compilation of Expressions – Compilation of Control Structures – Code Optimization – Interpreters.

**TOTAL : 45**

**TEXT BOOK**

1. Dhamdhere D.M., “Systems Programming”, Tata McGraw Hill, New Delhi, 2011.

**REFERENCE BOOKS**

1. Chattopadhyay, Santanu., “System Software”, Prentice Hall of India, New Delhi, 2009
2. Dhamdhere D.M., “Systems Programming and Operating Systems”, Second Revised Edition, Tata McGraw Hill, New Delhi, 2008.
3 Donovan John J., “Systems Programming” Tata McGraw-Hill, New Delhi, 2002.
4 Beck L., “System Software, An Introduction to System Programming”, Addison Wesley, 2002.

## 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.

## 11BC506 VISUAL PROGRAMMING LABORATORY

(Common to Computer Technology and Software Engineering)

**0 0 3 1**

**LIST OF EXPERIMENTS**

1. Working with controls such as label, text box, combo box. etc
2. Electricity Bill Preparation using Constructor and Destructor
3. Fibonacci, Factorial, Prime number Calculation - Branching & Looping
4. String Functions
5. Area Calculation using Polymorphism
6. Student Mark sheet Preparation using Inheritance
7. Payroll Processing using Interfaces
8. Voters List using Exception handling
9. Stack, Queue and List operation using System Collections
10. Finding file path, file extension using Dialog boxes and Menus
11. File processing using Functions
12. Bank Management System using ADO .Net

## 11BC507 SOFTWARE ENGINEERING AND CASE TOOLS LABORATORY

**0 0 3 1**

**LIST OF EXPERIMENTS**

1. Study of case tools such as rational rose or equivalent tools.
2. Problem Analysis and Project Planning:
   i. Study the problem and prepare the project scope, objective and infrastructure.
   ii. Prepare Gantt chart.
3. Requirements Analysis:
   i. Identify the phases and individual modules of the project and describe them.
   ii. Prepare the software requirement specification.
4. Design:
   Draw the Use-case diagram, Activity diagram, Class diagram, Sequence diagram.
5. Implementation:
   Implement the project using C/C++/Java/VB.NET as frontend and Ms-Access as backend .
6. Testing:
   Prepare test plan and Develop test case.

**List of Case Study**

Perform the software engineering activities mentioned above (2 to 6) for any of the three applications given below:

Student Mark Analysis, Banking System, Payroll Processing System, Online Course Registration, Ticket Reservation System, Stock Maintenance, Library Management System, Financial Accounting System, Online Quiz System, Institution Fee Billing System.

## 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.

## 11BC602 DISTRIBUTED COMPUTING

**3 1 0 4**

**Objective :**

- This course aims to build concepts regarding the fundamental principles of distributed systems
- To develop abstract models for understanding process interaction
- To understand the issues related to timing, coordination and distributed transactions

**MODULE – I** **15**

**Understanding Distributed Computing** : Characterization of Distributed systems - Introduction – Examples – Resource sharing and the Web – Challenges – System Models – Introduction – Architectural Models – Fundamental Models – Interprocess Communication – Introduction – API for the Internet Protocols – External data representation and marshaling – Client and Server Communication – Group Communication.

**MODULE – II** **15**

**Distributed Objects and Services**: Distributed Objects and Remote Invocation – Introduction- Communication between Distributed objects – Remote Procedural Call – Event and Notifications – Distributed File Systems – Introduction – File service architecture – Time and Global States – Introduction – Clocks, events and Process states – Synchronization physical clocks – Logical time and logical clocks – Global states – Distributed debugging.

**MODULE– III** **15**

**Coordination and Distributed Transactions** : Coordination and Agreement – Introduction - Distributed Mutual exclusion – Elections – Mutual communication – Transactions and Concurrency control – Introduction – Transactions- Nested transactions- Locks – Distributed Transactions - Introduction – Flat and nested distributed transactions – Atomic commit protocols – Replication – Introduction – System model and Group communication – Fault tolerant services.

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

**TEXT BOOK**

1. Coulouris George, Dollimore Jean and Kindberg Tim, “Distributed Systems Concepts and Design”, 4th Edition, Pearson Education, New Delhi, 2008.

**REFERENCE BOOKS**

1. Tanenbaum Andrew S, Maartenvan Steen, “Distibuted Systems–Principles and Pardigms”, Pearson Education, 2004
2. Liu M.L., “Distributed Computing Principles and Applications”, Pearson Education, 2004.

## 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.

## 11BC011 MANAGEMENT INFORMATION SYSTEMS

**3 0 0 3**

**Objective:**

- To create awareness about the information system in an industrial environment.
- To explore the elements of information system and its implementation.

**MODULE – I** **15**

**Introduction to MIS and Strategic Management:** MIS concept – Definition – Role of MIS – Impact of MIS – MIS and the User – Management as a Control system – MIS: A support to Management – Management Effectiveness and MIS – Organization as a system – MIS: organization effectiveness – E-business enterprise**:** Introduction – Organization of Business in an E-enterprise – E-business – E-commerce – E-communication – E-collaboration – The concept of corporate planning – Essentiality of Strategic Planning – Development of Business Strategies – Types of Strategies – Short-range Planning – Tools of Planning – Strategic Analysis of Business.

**MODULE- II** **15**

**Information Security and Decision Making:** Information Security Challenges in E-Business**:** Introduction – Security Threats and Vulnerability – Controlling Security Threat and Vulnerability – Management Security Threats in E-Business – Disaster Management – Information security – Decision Making : Decision making concepts – Decision making process – Decision Analysis by Analytical Modeling – Behavioral Concepts in Decision-making – Organizational Decision making – MIS and Decision making – Information, Knowledge, Business Intelligence: Information Concepts – Information: a quality product – Classification of Information – Methods of data and Information Collection – Value of Information – General Model of a Human as an Information Processor.

**MODULE- III** **15**

**Enterprise Management Systems**: Enterprise Management Systems – ERP system – ERP Model and Modules – Benefits of ERP – ERP Product Evaluation – ERP Implementation – Supply chain management – Information management in SCM – Customer relationship management – EMS and MIS – Technology of Information Systems**:** Introduction – Data Processing – Transaction Processing – Application Processing – Information System processing – OLAP for Analytical Information – TQM for Information System – Applications in Manufacturing Sector : Introduction – Personnel Management – Financial Management – Production Management – Raw Materials Management – Marketing Management – Corporate Overview.

**TOTAL : 45**

**TEXT BOOK**

1. Jawadekar, Waman S., "Management Information Systems: Text and Cases", Fourth Edition, Tata McGraw Hill, New Delhi, 2009.

**REFERENCE BOOKS**

1. Laudon. Kenneth C. and Laudon. Jane P., "Management Information Systems: Managing the Digital Firm", Ninth Edition, Prentice Hall of India, New Delhi, 2008.
2. O' Brien, James A, and Marakas, George M , "Management Information Systems", Seventh Edition, McGraw Hill, New York, 2007.
3. Schultheis, Robert and Sumner, Mary, "Management Information System: The Manager's View", Fourth Edition, Tata McGraw-Hill, New Delhi, 2007.

## 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.

## 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.

## 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.

## 11BC018 NETWORK SECURITY

(Common to Computer Technology and Software Engineering)

**3 0 0 3**

**Objective**:

- To introduce the principles of network security
- To impart a working knowledge of network security, authentication and web security issues in order to build secure systems.

**MODULE – I** **15**

**Introduction and Cryptography**: Security Trends- The OSI security Architecture –Services, Mechanisms and Attacks — A model for network security – Classical Encryption Techniques – Block ciphers and data encryption standard: simplified DES – Block cipher principles – The data encryption standard- The strength of DES - Introduction to Number theory – Public key cryptography and RSA: Principles of public-key cryptosystems – The RSA algorithm

**MODULE – II** **15**

**Message Authentication:** Key management – Diffie-Hellman key exchange –Authentication Requirements – Authentication functions – Message Authentication codes – Hash functions- Hash Algorithms : MD5 message digest algorithm – Secure Hash Algorithm – Digital signatures – Authentication protocols: Digital Signature Standard - Authentication Applications: Kerberos.

**MODULE – III** **15**

**Network Security Applications:** Electronic Mail Security: Pretty Good Privacy – S/MIME - IP Security – Web Security: Web Security Considerations – secure sockets layer and transport layer security – Secure Electronic transaction - Intruders: Intrusion detection – Password management – Malicious software: Viruses and related threats – Virus countermeasures – Firewalls: Design principles – Trusted systems.

**TOTAL : 45**

**TEXT BOOK**

1. Stallings William., "Cryptography and Network Security: Principles and Practice", Fourth Edition, Prentice Hall of India, New Delhi, 2010.

**REFERENCE BOOKS**

1. Kahate Atul, "Cryptography and Network Security", Tata McGraw Hill, New Delhi,2003
2. Forouzan, Behrouz A., "Introduction to Cryptography and Network Security", First Edition, McGraw-Hill Higher Education,2008
3. Pfleeger. Charles P and Pfleeger. Shari Lawrence., "Security in Computing", Third Edition, Pearson Education, New Delhi, 2006

## 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

## 11BC019 COMPILER DESIGN

**3 0 0 3**

**Objective:**

- To describe the organization of a compiler.
- To understand, design and implement a lexical analyzer.
- To gain the knowledge about designing a parser.
- To understand the design of code generation schemes.
- To understand optimization of codes and runtime environment

**MODULE – I** **15**

**Lexical Analysis and Syntax Analysis:** Introduction- Finite automata and Lexical analyzer: Lexical analyzer- Regular expressions- Finite automata- From regular expression to Finite automata- Implementation of Lexical analyzer- The syntactic specification of programming languages: Context-free grammars-Basic parsing Techniques: Parsers- Shift reduce parsing- Operator precedence parsing- Top down parsing- Predictive parsers- LR parsers-Constructing SLR parsing tables- Constructing canonical LR parsing tables.

**MODULE- II** **15**

**Translation and Symbol Tables:** Syntax directed translation: Syntax directed translation scheme- Intermediate code- Postfix notation- Parse trees and Syntax trees- Three address codes, quadruples and triples- Translation of assignment statements- Boolean expression- Statements that alter flow of control- Symbol tables: The contents of a symbol table- Data structure for symbol table- Error detection and Recovery: Lexical phase errors-Syntactic phase errors- Semantic phase errors.

**MODULE-III** **15**

**Code Optimization and Code Generation:** Introduction to code optimization: Principal sources of optimization- loop optimization- DAG representation of basic blocks- global data flow analysis- More about loop optimization: dominators- reducible flow graphs- depth first search- loop invariant computation- code generation: object programs- problems in code generation- A machine model- simple code generators- register allocation and assignment- code generation from DAG- peephole optimization- The C compilers.

**TOTAL :45**

**TEXT BOOK**

1. Aho, Alfred, Sethi Ravi, and Ullman, Jeffrey D, “Compilers Principles, Techniques and Tools”, Narosa publication, New Delhi, 2002.

**REFERENCE BOOKS**

1. Holub Allen I., “Compiler Design in C”, Prentice Hall of India, New Delhi, 2003.
2. Fischer, C. N. and LeBlanc R. J., “Crafting a Compiler with C”, Benjamin Cummings, 2003
3. Bennet J.P., “Introduction to Compiler Techniques”, Second Edition, Tata McGraw-Hill, New Delhi, 2003.
4. Louden Kenneth C., “Compiler Construction: Principles and Practice”, Thompson Learning, Singapore, 2003.

## 11BC020 EXTREME PROGRAMMING

**3 0 0 3**

**Objective:**

- To explore C# programs based on the Microsoft .NET Framework, including console applications, class libraries.
- To design and develop a windows form-based applications, using correct syntax and modern object-oriented programming techniques.

**MODULE – I** **15**

**Introduction to .Net Framework and C#:** Introduction to.Net, .Net Framework – Common Language Runtime- Common Type System- Common Language Specification- Introducing C# - Overview of C# - Literals, Variables and Data types – Operators Expressions- Decision making – Branching and looping.

**MODULE - II** **15**

**Classes and Array:** Classes and Objects: Nesting of classes, Methods in C#: constant members, read only members, properties, indexers overloading methods, overriding Methods – Handling Arrays– Manipulating String - Structures and Enumerations.

**MODULE – III** **15**

**Inheritance and Delegates:** Inheritance and Polymorphism – Interfaces- Operator overloading – Delegates and Events — Managing Errors and Exception Handling –Multithreading in C#.

**TOTAL : 45**

**TEXT BOOK**

1. Balagurusamy, E., "Programming in C#", Second Edition, Tata McGraw-Hill, New Delhi, 2007.

**REFERENCE BOOKS**

1. Ramakrishna Rao, "Programming with C#: Concepts and Practice", Prentice Hall of India, New Delhi, 2008.
2. Platt, David S, "Introducing Microsoft .Net", Third Edition, Prentice Hall of India, New Delhi, 2008.
3. Lippman, "C# Primer", Third Edition, Pearson Education, Delhi, 2002.
4. Liberty, J, "Programming C#", Second Edition, O'Reilly & Associates Inc. California, 2002.

## 11BC021 OPEN SOURCE PROGRAMMING

**3 0 0 3**

**Objective :**

- To make student understand about open source languages and database
- To promote knowledge about open source OS and their applications
- To promote knowledge about PHP

**MODULE – I** **15**

**Introduction and Open Source OS – Linux:** Introduction to Linux Operating Systems-Basic Unix Commands-File Filters-Process in Linux-Shell Programming-Web Server.

**MODULE - II** **15**

**Open Source Database - MySQL:** Introduction to MySQL-Database Design-Relationship Modeling-Normalization-MySQL Data Types—Manipulating Databases-Manipulating Tables-Inserting and Updating Data.

**MODULE - III** **15**

**Open Source Programming Languages – PHP:** Querying Data-Joins and Indexes-Operators in MySQL-Function in MySQL - Introduction to PHP -Types and Variables-Operators-Control Structures-Functions and Array-PHP API for MySQL.

**TOTAL :45**

**TEXT BOOKS**


1. Venkatesswarlu N.B., "Introduction to LINUX: Installation and Programming", BS Publication, 2006 (MODULE-I).
2. Butcher Anthony, "MySQL in 21 Days", Second Edition, Pearson Education., New Delhi, 2002. (MODULE II & III).


**REFERENCE BOOKS**


1. Suehring, Steve, "MySQL Bible", First Edition, John Wiley & Sons, New York, 2002.
2. Lerdorf Rasmus, and Tatroe Levtin, "Programming PHP", Second edition, O'Relly Publications, USA, 2002.
3. Darry, Gove, "Solaris Application Programming", First edition, Prentice Hall of India, New Delhi,2007

## 11BC022 PARALLEL PROCESSING

**3 0 0 3**

**Objective**:

- To introduce the basics of hardware design and instruction execution.
- To study the importance of Parallel architecture.
- To study different case studies on a variety of applications

**MODULE – I** **15**

**Parallel Computer Models:** Parallel Computer Models: Multiprocessors and Multi computers – Multi vector and SIMD Computers - PRAM and VLSI models - Program and Network properties: Program Flow Mechanism - System Interconnection Architectures - Parallel processing Applications - speedup performance - Hardware Technologies: Processor and Memory Hierarchy: Advanced processor Technology.

**MODULE - II** **15**

**Processor and Memory Hierarchy:** Super scalar and Vector Processors - Memory Hierarchy Technology - Virtual Memory Technology –Bus, Cache and Shared Memory organizations - Processor Development Techniques: Linear Pipeline Processors - Non-linear pipeline processors - Instruction pipeline Design: Instruction Execution Phases, Mechanism for Instruction pipelining, dynamic instruction scheduling - Arithmetic pipeline design: Computer Arithmetic principles, Multifunctional Arithmetic pipelines – Super scalar and super pipeline design.

**MODULE- III** **15**

**Parallel and Scalable Architecture:** Parallel and Scalable Architectures: Multiprocessor system interconnects - Cache coherence and synchronization mechanisms: The Cache Coherence Problem, Snoopy Bus Protocols, Directory based protocols - Message - passing mechanisms - multi vector multiprocessors: compound vector processing - SIMD computer organizations - Scalable and multithreaded Architectures- Principles of multithreading - Fine-grain multi computers -. Parallel Programming Software: Parallel programming models - parallel languages and compliers - dependence analysis of data arrays - code optimization and scheduling - parallel programming environments- multiprocessor UNIX design goals - master-slave and multithreaded UNIX - multicomputer UNIX extensions.

**TOTAL: 45**

**TEXT BOOK**

1. Hwang Kai, "Advanced Computer Architecture: Parallelism, Scalability, Programmability", McGraw Hill, New Delhi, 2005.

**REFERENCE BOOKS**

1. Culler D.E., Singh J.P. and Gupta A., “Parallel Computer Architecture: A Hardware / Software Approach”, Harcourt Asia, Morgan Kaufmann, New Delhi, 1999.
2. Quinn, M. J., “Parallel Computing: Theory and Practice”, McGraw-Hill, New York, 1994.
3. Hwang Kai and Briggs Faye A, "Computer Architecture and Parallel Processing", McGraw Hill, New York, 1985.

## 11BC023 UNIX AND SHELL PROGRAMMING

**3 0 0 3**

**Objectives**

- To use the basic UNIX commands and editors
- To understand the functioning of the multi-user UNIX operating system
- To gain knowledge of file management in UNIX

**MODULE – I** **15**

**Introduction to Unix and Shell Program:** UNIX for beginners: Getting started- files- common commands- directories- The Shell - The file system: Basics of file - directories and file name - file permission - I-nodes - directory hierarchy.

**MODULE - II** **15**

**Shell Programming:** Using the shell: Command line structure- Meta characters- creating new commands- command arguments and parameters- program output as argument- shell variables- looping in shell program-Filters: the GREP family- other filters- stream editors- the awk patterns.

**MODULE - III** **15**

**Shell Commands and Unix System Calls:** Shell programming: Customizing cal command- WHICH command- while and until loops- traps- replacing a file: overwrite- Zap command- pick command- news command- get and put command- programming with standard I/O- Standard Input and Output :vis - program arguments: vis version 2 - A screen at a time printer : p- file access: vis version 3- interactive file comparison: idiff - low level I/O- file System: directories - I-nodes- processes- signals- interrupts.

**TOTAL :45**

**TEXT BOOK**

1. Kernighan, Brian W. and Pike. Rob, “The UNIX Programming Environment”, Prentice Hall of India, New Delhi, 2003.

**REFERENCE BOOKS**

1. Bach Maurice J., “Design of the Unix Operating System”, Third Edition, Prentice Hall of India, New Delhi, 2000,
2. Sumitabha Das, “Unix: Concepts and Applications”, Third Edition, Tata McGraw Hill, New Delhi, 2006.
3. Yate, Thomas Rebecca., “A User Guide to Unix System”, Second Edition, Tata McGraw Hill, New Delhi, 2002.