

KONGU ENGINEERING COLLEGE
PERUNDURAI ERODE – 638 052
(Autonomous)

VISION

To be a centre of excellence for development and dissemination of knowledge in Applied Sciences, Technology, Engineering and Management for the Nation and beyond.

MISSION

We are committed to value based Education, Research and Consultancy in Engineering and Management and to bring out technically competent, ethically strong and quality professionals to keep our Nation ahead in the competitive knowledge intensive world.

QUALITY POLICY

We are committed to

- Providing value based quality education for the development of students as competent and responsible citizens.
- Contributing to the nation and beyond through research and development
- Continuously improving our services

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION

To be a centre of excellence for nurturing competent computer professionals of high caliber and quality for catering to the ever-changing needs of the industry and society.

MISSION

Department of Computer Science and Engineering is committed to

- MS1: Develop innovative, competent and ethically strong computer engineers to meet global challenges.
- MS2: Foster consultancy and basic as well as applied research activities to solve real world problems.
- MS3: Endeavour for constant upgradation of technical expertise to cater to the needs of the industry and society

2011 REGULATIONS

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Graduates of Computer Science and Engineering will

- PEO1: Utilize the fundamental knowledge of basic sciences and engineering to succeed in their professional career.
- PEO2: Analyze, design, develop and verify computer-based solutions to real world problems
- PEO3: Exhibit soft skills, ethical code of conduct and ability for life-long learning

MAPPING OF MISSION STATEMENTS (MS) WITH PEOs

| MS\PEO | PEO1 | PEO2 | PEO3 |
|---------------|-------------|-------------|-------------|
| MS1 | 2 | 2 | 3 |
| MS2 | 3 | 3 | 2 |
| MS3 | 3 | 2 | 3 |

1 – Slight, 2 – Moderate, 3 – Substantial

PROGRAM OUTCOMES (POs)

Graduates of Computer Science and Engineering will be able to

- a. apply knowledge of mathematics, science and engineering for providing computer based solutions
- b. identify, analyze and formulate computer engineering problems based on the knowledge of basic sciences and engineering
- c. design and develop computer based systems and processes that meet the desired requirements and specifications
- d. investigate and conduct experiments on complex computer science problems, analyze, interpret and report results
- e. use engineering tools to solve computer engineering problems within realistic constraints
- f. analyze the local and global impact of computing on individuals, organizations, and society
- g. propose viable ideas and solutions in tune with global, economic, environmental, and societal contexts
- h. discharge responsibilities by exhibiting professional and ethical values
- i. function effectively to accomplish a common goal as an individual as well as in multidisciplinary teams
- j. communicate effectively at various levels
- k. exhibit knowledge of project and financial management useful to become an entrepreneur
- l. recognize the need for life-long learning in the context of continuous technological and other changes

MAPPING OF PEOs WITH POs

| PEO\PO | a | b | c | d | e | f | g | h | i | j | k | l |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|
| PEO1 | 3 | 2 | - | - | - | - | 2 | - | - | - | 1 | 2 |
| PEO2 | - | 3 | 3 | 3 | 2 | - | 1 | - | - | - | 2 | 2 |
| PEO3 | - | - | - | - | - | 3 | - | 3 | 3 | 3 | - | 3 |

1 – Slight, 2 – Moderate, 3 – Substantial

CURRICULUM BREAKDOWN STRUCTURE UNDER REGULATION 2011

| Curriculum Breakdown Structure(CBS) | Curriculum Content (% of total number of credits of the program) | Total number of contact hours | Total number of credits |
|-------------------------------------|--|-------------------------------|-------------------------|
| Basic Sciences(BS) | 8.89 | 300 | 16 |
| Engineering Sciences(ES) | 15 | 525 | 27 |
| Humanities and Social Sciences(HS) | 17.22 | 495 | 31 |
| Program Core(PC) | 47.22 | 1695 | 85 |
| Program Electives(PE) | 5 | 135 | 9 |
| Open Electives(OE) | 1.67 | 45 | 3 |
| Project(s)/Internships(PR) | 5 | 270 | 9 |
| Total | | | 180 |

B.E. DEGREE IN COMPUTER SCIENCE AND ENGINEERING

CURRICULUM

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

SEMESTER – I

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|--------------|--|--------------|---|---|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11EL101 | Technical English | 3 | 0 | 0 | 3 | 50 | 50 | 100 | HS |
| 11MA101 | Engineering Mathematics-I | 3 | 1 | 0 | 4 | 50 | 50 | 100 | BS |
| 11PH101 | Applied Physics | 3 | 0 | 0 | 3 | 50 | 50 | 100 | BS |
| 11CY101 | Applied Chemistry | 3 | 0 | 0 | 3 | 50 | 50 | 100 | BS |
| 11ME101 | Basics of Civil and Mechanical Engineering | 3 | 0 | 0 | 3 | 50 | 50 | 100 | ES |
| 11ME102 | Engineering Drawing | 2 | 0 | 3 | 3 | 50 | 50 | 100 | ES |
| | PRACTICAL | | | | | | | | |
| 11PH102 | Physical Sciences Laboratory-I | 0 | 0 | 3 | 1 | 50 | 50 | 100 | BS |
| 11ME103 | Engineering Practices Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | ES |
| Total | | | | | 21 | | | | |

CA- Continuous Assessment, ESE- End Semester Examination

CBS – Curriculum Breakdown Structure

KONGU ENGINEERING COLLEGE, PERUNDURAI, ERODE- 638 052
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B.E. DEGREE IN COMPUTER SCIENCE AND ENGINEERING

CURRICULUM

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

SEMESTER – II

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|--------------|---|--------------|---|---|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11EL201 | Communication Skills | 3 | 0 | 0 | 3 | 50 | 50 | 100 | HS |
| 11MA201 | Engineering Mathematics-II | 3 | 1 | 0 | 4 | 50 | 50 | 100 | BS |
| 11PH201 | Materials Science | 3 | 0 | 0 | 3 | 50 | 50 | 100 | ES |
| 11CY201 | Environmental Science | 3 | 0 | 0 | 3 | 50 | 50 | 100 | HS |
| 11CS101 | Problem Solving and Programming | 3 | 0 | 0 | 3 | 50 | 50 | 100 | ES |
| 11EE101 | Basics of Electrical and Electronics Engineering | 3 | 0 | 0 | 3 | 50 | 50 | 100 | ES |
| | PRACTICAL | | | | | | | | |
| 11PH202 | Physical Sciences Laboratory-II | 0 | 0 | 3 | 1 | 50 | 50 | 100 | BS |
| 11CS102 | Programming Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | ES |
| 11EE203 | Electrical and Electronics Engineering Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | ES |
| Total | | | | | 22 | | | | |

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CURRICULUM

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SEMESTER – III

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|--------------|---|--------------|---|---|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11MA301 | Engineering Mathematics - III | 3 | 1 | 0 | 4 | 50 | 50 | 100 | HS |
| 11EC301 | Digital Electronics | 3 | 1 | 0 | 4 | 50 | 50 | 100 | ES |
| 11CS301 | Data Structures and Algorithms | 3 | 1 | 0 | 4 | 50 | 50 | 100 | PC |
| 11CS302 | Object Oriented Programming with C++ | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS303 | Computer Organisation | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS304 | Software Engineering | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| | PRACTICAL | | | | | | | | |
| 11CS305 | Data Structures and Algorithms Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11EC304 | Digital Electronics Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | ES |
| 11CS306 | Object Oriented Programming with C++ Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| Total | | | | | 24 | | | | |

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CURRICULUM

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

SEMESTER – IV

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|--------------|--|--------------|---|---|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11MA402 | Probability and Queuing Theory | 3 | 1 | 0 | 4 | 50 | 50 | 100 | HS |
| 11CS401 | Database Management Systems | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS402 | Operating Systems | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS403 | Computer Networks | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11EC407 | Analog and Digital Communication | 3 | 1 | 0 | 4 | 50 | 50 | 100 | ES |
| 11IT402 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 | 50 | 50 | 100 | PC |
| | PRACTICAL | | | | | | | | |
| 11CS404 | Database Management Systems Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11CS405 | Visual Programming Laboratory | 1 | 0 | 3 | 2 | 50 | 50 | 100 | PC |
| 11CS406 | Operating Systems Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| Total | | | | | 25 | | | | |

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SEMESTER - V

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|-------------|---|--------------|---|---|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11MA501 | Discrete Mathematics | 3 | 1 | 0 | 4 | 50 | 50 | 100 | HS |
| 11CS501 | Java Programming | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS502 | Theory of Computation | 3 | 1 | 0 | 4 | 50 | 50 | 100 | PC |
| 11CS503 | TCP/IP Design and Implementation | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11EE504 | Microprocessors and Microcontrollers | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS504 | Distributed Computing | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| | PRACTICAL | | | | | | | | |
| 11CS505 | Java Programming Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11EE506 | Microprocessors and Microcontrollers Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11IT604 | Network Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11EL202 | Communication Skills Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | HS |
| Total | | | | | 24 | | | | |

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SEMESTER - VI

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|--------------|--|--------------|---|---|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11GE601 | Economics and Management for Engineers | 3 | 0 | 0 | 3 | 50 | 50 | 100 | HS |
| 11CS601 | Principles of Compiler Design | 3 | 1 | 0 | 4 | 50 | 50 | 100 | PC |
| 11CS602 | Mobile Computing | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS603 | .NET Technologies | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11IT702 | Web Technology | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| | Elective - I | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PE |
| | PRACTICAL | | | | | | | | |
| 11CS604 | Compiler Design Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11CS605 | .NET Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11IT704 | Web Technology Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| Total | | | | | 22 | | | | |

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SEMESTER - VII

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|--------------|-------------------------------------|--------------|---|---|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11GE701 | Total Quality Management | 3 | 0 | 0 | 3 | 50 | 50 | 100 | HS |
| 11CS701 | Object Oriented Analysis and Design | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS702 | Graphics and Multimedia | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS703 | Information Security | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| 11CS704 | Service Oriented Architecture | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| | Elective - II | 3 | 0 | 0 | 3 | 50 | 50 | 100 | OE |
| | PRACTICAL | | | | | | | | |
| 11CS705 | Case Tools Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11CS706 | Graphics and Multimedia Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| 11IT705 | Network Security Laboratory | 0 | 0 | 3 | 1 | 50 | 50 | 100 | PC |
| Total | | | | | 21 | | | | |

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

SEMESTER - VIII

| Course Code | Course Title | Hours / Week | | | Credit | Maximum Marks | | | CBS |
|--------------|--------------------------------------|--------------|---|----|-----------|---------------|-----|-------|-----|
| | | L | T | P | | CA | ESE | Total | |
| | THEORY | | | | | | | | |
| 11GE801 | Professional Ethics and Human Values | 3 | 0 | 0 | 3 | 50 | 50 | 100 | HS |
| 11CS801 | Software Project Management | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PC |
| | Elective – III | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PE |
| | Elective - IV | 3 | 0 | 0 | 3 | 50 | 50 | 100 | PE |
| | PRACTICAL | | | | | | | | |
| 11CS802 | Project Work | 0 | 0 | 18 | 9 | 100 | 100 | 200 | PR |
| Total | | | | | 21 | | | | |

CA - Continuous Assessment, ESE - End Semester Examination

CBS – Curriculum Breakdown Structure

LIST OF ELECTIVES

| Course Code | Course Title | L | T | P | C | CBS |
|--------------------|---|----------|----------|----------|----------|------------|
| 11CS011 | Software Quality Assurance | 3 | 0 | 0 | 3 | PE |
| 11CS012 | Advanced Database Technology | 3 | 0 | 0 | 3 | PE |
| 11CS013 | Adhoc Networks | 3 | 0 | 0 | 3 | PE |
| 11CS014 | Software Testing | 3 | 0 | 0 | 3 | PE |
| 11CS015 | Rational Unified Process | 3 | 0 | 0 | 3 | PE |
| 11CS016 | Grid Computing | 3 | 0 | 0 | 3 | PE |
| 11CS017 | Agent Technology | 3 | 0 | 0 | 3 | PE |
| 11CS018 | Component Based Technology | 3 | 0 | 0 | 3 | PE |
| 11CS019 | Unix Internals | 3 | 0 | 0 | 3 | PE |
| 11EC012 | Soft Computing | 3 | 0 | 0 | 3 | PE |
| 11EI605 | Embedded Control | 3 | 0 | 0 | 3 | PE |
| 11IT011 | High Performance Networks | 3 | 0 | 0 | 3 | PE |
| 11IT013 | Java Technologies | 3 | 0 | 0 | 3 | OE |
| 11IT014 | Cloud Computing | 3 | 0 | 0 | 3 | PE |
| 11CS021 | E-Commerce | 3 | 0 | 0 | 3 | PE |
| 11IT017 | Multi-Core Architecture and Programming | 3 | 0 | 0 | 3 | PE |
| 11IT019 | Data Warehousing and Data Mining | 3 | 0 | 0 | 3 | PE |
| 11GE011 | Entrepreneurship Development | 3 | 0 | 0 | 3 | PE |
| 11CS020 | Business Intelligence and Its Application | 3 | 0 | 0 | 3 | PE |
| 11IT020 | Building Enterprise Applications | 3 | 0 | 0 | 3 | PE |

11EL101 TECHNICAL ENGLISH
(Common to all Engineering and Technology branches)

3 0 0 3

MODULE – I

17

Grammar and Vocabulary: Word formation with prefixes and suffixes – Synonyms and Antonyms – Verb Patterns – Tenses (simple and compound tenses) - Simple, Compound and Complex Sentences - Voice – Use of Conditionals - Comparative Adjectives (affirmative and negative) – Expanding Nominal compounds - Articles - Use of Prepositions – Identifying Odd Words – Acronyms.

MODULE – II

13

Listening: Listening for General Content – Intensive Listening – Listening for Specific Information : Retrieval of Factual Information – Listening to Identify Topic, Context, Function, Speaker’s Opinion, Attitude, etc. – Global Understanding Skills and Ability to infer, extract gist and understand main ideas – Note-taking: Guided and unguided- Listening to fill up gapped texts.

Writing: Introduction to the Characteristics of Technical Style - Writing Definitions and Descriptions - Paragraph Writing (topic sentence and its role, unity, coherence and use of cohesive expressions) - Process Description(use of sequencing connectives)– Comparison and Contrast - Classifying the data - analysing / interpreting the data – Personal letter - Formal letter writing (Inviting Guest Speakers, letter to the editor, letter for seeking practical training, and letter for undertaking project works in industries) – editing (punctuation, spelling and grammar) – Recommendations & Suggestions.

MODULE- III

15

Reading: Exposure to different Reading Techniques - Reading for Gist and global meaning - Predicting the content - Skimming the text – Identifying the Topic Sentence and its role in each paragraph - Scanning - Inferring / identifying lexical and contextual meanings - Reading for structure and detail - Transfer of information / guided note-making - Understanding discourse coherence - Sequencing of sentences.

Speaking: Verbal and Non Verbal Communication - Pronunciation drills/ Tongue Twisters – Formal and Informal English - Oral practice – Developing Confidence - Introducing Oneself - Asking for or Eliciting Information - Describing Objects – Offering Suggestions and Recommendations – expressing opinions (agreement / disagreement.

TOTAL : 45

TEXT BOOK

1. “English for Engineers and Technologists”, Combined Edition, Volume. I & II, Orient Longman, Oxford University Press, New Delhi, 2006.

REFERENCE BOOKS

1. Aysha Viswamohan, “English for Technical Communication”, Tata McGraw-Hill, New Delhi, 2008.
2. Rizvi M Ashraf, "Effective Technical Communication", Fifth Edition, Tata McGraw- Hill, New Delhi, 2007.
3. Mark Ibbotson, “Cambridge English for Engineering”, Cambridge University Press, New Delhi, 2009.
4. Rama Krishna Rao, A, “Learning English: A Communicative Approach” Orient Black Swan, Hyderabad, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Improve their vocabulary and appropriate usage of words in different academic and professional contexts.
- CO2: Familiarize with different rhetorical functions of technical English.
- CO3: Develop strategies that could be adopted while reading texts.
- CO4: Speak effectively in English and career related situations.
- CO5: Acquire knowledge in academic and professional writing.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | | | | | | | 2 | 3 | | 1 |
| CO2 | | | | | | | | | 2 | 3 | | |
| CO3 | | | | 2 | | | | | 2 | 3 | | 1 |
| CO4 | | | | | | | | | 2 | 3 | | |
| CO5 | | | | 1 | | | | | 1 | 3 | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11MA101 ENGINEERING MATHEMATICS – I
(Common to all Engineering and Technology branches)

3 1 0 4

MODULE – I

15

Matrices: Linear independent and dependent of vectors – Characteristic equation – Eigen values and Eigen vectors of a real matrix – Properties of eigen values and eigen vectors (without proof) – Cayley – Hamilton theorem (without proof).

Diagonalisation: Similarity transformation (concept only) – Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Nature of quadratic form – Reduction of quadratic form to canonical form by orthogonal transformation.

MODULE – II

15

Differential Calculus: Curvature – Cartesian co-ordinates – Centre and radius of curvature – Circle of curvature. Involutes and evolutes – Envelopes – Properties of envelopes and evolutes.

Functions of several variables: Functions of two variables – Partial derivatives – Total differential – Maxima and minima – Constrained maxima and minima – Lagrange’s multiplier method – Jacobians.

MODULE - III

15

Differential Equations: Linear differential equations of Second and higher order with constant coefficients when the R.H.S is e^{ax} , x^n , $n > 0$, $\sin ax$, $\cos ax$, $e^{ax}x^n$, $e^{ax} \sin \beta x$, $e^{ax} \cos \beta x$, $x^n \sin ax$ and $x^n \cos ax$ – Differential Equations with variable coefficients (Cauchy’s form). Method of variation of parameters - Simultaneous first order linear equations with constant coefficients.

Applications of Differential Equations: Solution of specified differential equations connected with electric circuits, simple harmonic motion (Differential equations and associated conditions need to be given).

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

- Kandasamy. P, Thilagavathy. K and Gunavathy. K, “Engineering Mathematics For First Year B.E/B.Tech”, Reprint Edition 2011, S.Chand and Co., New Delhi.
- Veerarajan. T., “Engineering Mathematics, (for first year), Reprint Edition 2011, Tata McGraw-Hill New Delhi.

REFERENCE BOOKS

- Grewal. B.S, “Higher Engineering Mathematics”, 40th Edition, Khanna Publications, New Delhi, 2007.
- Jain R.K and Iyengar S.R.K, “Advanced Engineering Mathematics”, 3rd Edition, Narosa Publishing House, New Delhi, 2007.
- Bali N.P and Manish Goyal, “Text Book of Engineering Mathematics”, 3rd Edition, Laxmi Publications, New Delhi, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Solve engineering problems which needs matrix computations.

CO2: Utilize the geometrical aspects of differential calculus and extremal problems which arise in function of several variables.

CO3: Apply the concept of ordinary differential equations for modeling and finding solutions to engineering problems.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 1 | 2 | | | | | | | 1 |
| CO2 | 3 | 3 | | | | | | | | | | 1 |
| CO3 | 3 | 3 | | 1 | 2 | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11PH101 APPLIED PHYSICS
(Common to all Engineering and Technology branches)

3 0 0 3

MODULE – I

15

Acoustics : Classification of sound – Characteristics of musical sound – Weber-Fechner law – Absorption Coefficient – Reverberation – Reverberation time – Sabine’s formula (growth & decay) – Factors affecting acoustics of buildings (reverberation time, loudness, focusing, echo, echelon effect, resonance and noise) and their remedies.

Ultrasonics : Introduction – Production – Magnetostriction effect – Magnetostrictive generator - Inverse piezoelectric effect - Piezoelectric generator - Detection of ultrasonics - Properties – Cavitation - Industrial applications – drilling, welding, soldering and cleaning – SONAR - Non destructive testing – Ultrasonic pulse echo system - Medical applications – A, B and C Scan displays – Ultrasonic imaging technique.

MODULE – II

15

Lasers: Introduction – Principle of spontaneous emission and stimulated emission - Population inversion, Pumping, Einstein’s Coefficients (A&B) - Types of lasers – Nd:YAG, CO₂, Semiconductor lasers: Homojunction and Heterojunction – Laser Applications – Industrial applications – Laser welding, Laser cutting, Laser drilling – Holography – Construction and reconstruction of images.

Fiber Optics & Applications: Principle – Classification based on materials, Modes of propagation, Refractive index profile - Crucible-crucible technique of fiber fabrication - Light sources for fiber optics – Detectors - Fiber optical communication links - Losses in optical fibers – Fiber optic sensors – Temperature, displacement, voltage and magnetic field measurement.

MODULE - III

15

Quantum Physics and Applications: Black body radiation – Planck’s theory (derivation)– Deduction of Wien’s displacement law and Rayleigh – Jean’s Law from Planck’s theory – Compton effect – Theory and experimental verification - Matter waves – Uncertainty principle - Experimental verification – Schroedinger’s wave equations – Time independent and time dependent equation – Physical Significance of wave function – Particle in a box (One dimensional) - Optical microscope – Limitations of optical microscopy - Scanning electron microscope - Transmission electron microscope.

TOTAL : 45

TEXT BOOKS

1. Avadhanalu M N and Kshirsagar P G, “A Text Book of Engineering Physics”, S.Chand & company Ltd, New Delhi, 2007.
2. Palanisamy P K, “Engineering Physics”, Scitech Publications, Chennai, 2008.

REFERENCE BOOKS

1. Gaur R K and Gupta S L, “Engineering Physics”, Dhanpat Rai and Sons, New Delhi, 2006.
2. Rajendran V, “Engineering Physics”, Prentice Hall of India, New Delhi, 2008.
3. Rajagopal K, “Textbook of Engineering Physics”, Part I, PHI Learning Pvt. Ltd., New Delhi, 2008.
4. Personick S D, “Fibre Optics, Technology and Applications”, Khanna Publishers New Delhi, 1987.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Infer and apply the basic concepts of design of acoustically good buildings and ultrasonics in engineering and technology.
- CO2: Demonstrate the basics of fiber optic communication system and laser phenomena, and make use of them in engineering and technology.
- CO3: Relate and inference the concepts of quantum physics to optical, electrical and other physical phenomena.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | - | 2 | - | - | - | - | - | 1 | - | 1 |
| CO2 | 3 | 3 | - | 2 | - | - | - | - | - | 1 | - | 1 |
| CO3 | 3 | 3 | - | 2 | - | - | - | - | - | 1 | - | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

15

Water: Introduction - Sources of water - impurities in water - Types of water - Water quality standards - Water quality parameters (Discussion not required) - Hardness of water- Expression of hardness - Units of hardness –Estimation of Hardness of water by EDTA method – Determination of alkalinity - Disadvantages of using hard water - Boiler troubles due to hard water - scale and sludge formation – Boiler corrosion – caustic embrittlement- priming and foaming-Softening of water- External treatment methods - Lime soda, zeolite and demineralization process (principle, process, advantages and disadvantages only) Internal treatment process - colloidal, carbonate, calgon and phosphate conditioning (brief discussion only) - desalination by reverse osmosis method. **Electrochemistry:** Introduction - Cells – Representation of a galvanic cell - EMF measurements and its applications – Electrode potential - Nernst Equation – Reference electrodes (hydrogen and calomel electrodes) – Electrochemical series and its applications – Conductometric titrations (strong acid Vs strong base only) - Batteries – Lead acid and Ni-Cd batteries.

MODULE – II

15

Corrosion and Its Control: Introduction – Mechanism of dry and wet corrosion – galvanic corrosion - concentration cell corrosion – Galvanic series - Factors influencing rate of corrosion – corrosion control methods - Sacrificial anode and impressed current cathodic method – Corrosion inhibitors - Protective coatings - classifications - Pretreatment of metal surface - Metallic coating -electroplating and electrolessplating (General discussion) - Hot dipping (Tinning and galvanising) - Nonmetallic coating - surface conversion coating (phosphate coating and anodized coating) - Organic coating - paints – constituents and their function – Special paints (Fire retardant, temperature indicating, water repellent and luminescent paints).**Combustion:** Introduction – Calorific Values – Gross and net – Theoretical calculation of minimum air for combustion (Theoretical aspects only) – flue gas analysis – Orsat’s method - Explosive range and Spontaneous Ignition Temperature.

MODULE - III

15

Fuels: coal – proximate and ultimate analysis – their importance – metallurgical coke - Otto-Hoffman byproduct method - Liquid fuel - refining of petroleum - Straight run, cracked and polymer petrol – Manufacture of synthetic petrol - polymerization (thermal and catalytic methods) - Hydrogenation of coal (Fisher Tropsch and Bergius methods) - knocking - octane number – improving octane number by additives – Diesel – cetane number – Gaseous fuels (Water gas, producer gas and biogas). **Polymers:** Introduction – Nomenclature of polymers – functionality – polymerization - types – addition, condensation and co-polymerization with examples – Effect of polymer structure on properties (strength, plastic deformation, crystallinity and chemical resistance) - plastics – types (thermo and thermosetting plastics) - individual polymers - Polyethylene, polypropylene, PVC, Teflon, Bakelite and epoxy resin (preparation, properties and uses only) - Compounding of plastics- Fabrication of plastics (compression, injection and extrusion moulding methods) – conducting polymers

TOTAL : 45

TEXT BOOK

- Jain PC and Monica Jain, “Engineering Chemistry”, 15th Edition, Dhanpat Rai publication Co., New Delhi, 2008.

REFERENCE BOOKS

- Dara S.S., “A Text Book of Engineering Chemistry”, S.Chand & Co. Ltd., New Delhi, 2006.
- Sharma B.K., “Engineering Chemistry”, Krishna Prakasan Media (P) Ltd., Meerut, 2001.
- Sivasankar B., “Engineering Chemistry”, Tata McGraw-Hill, New Delhi, 2008.
- Krishnamurthy N., “Engineering Chemistry”, 2nd Edition, PHI Learning private Limited, New Delhi, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Represent the water quality parameters, water treatment methods for potable and industrial purpose and apply the principles of electrochemistry for EMF measurement and energy storing devices
- CO2: Comprehend the effect of corrosion and corrosion control methods.
- CO3: Represent the calculation for calorific values, theoretical amount of minimum air required for complete combustion and flue gas analysis.
- CO4: Represents the types of fuel, engines , some individual polymers ,fabrications of plastics.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | | 2 | 1 | 2 | 3 | | | 3 | | 3 |
| CO2 | 3 | 2 | | 2 | 1 | 2 | 3 | | | 3 | | 3 |
| CO3 | 3 | 2 | | 2 | 1 | 2 | 3 | | | 3 | | 3 |
| CO4 | 3 | 2 | | 2 | 1 | 2 | 3 | | | 3 | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11ME101 BASICS OF CIVIL AND MECHANICAL ENGINEERING

(Common to all Engineering and Technology branches)

3 0 0 3**MODULE – I****Construction Materials:** Introduction – Civil Engineering – Materials – bricks – stones – sand – cement – concrete – steel sections – Site selection for foundations – Bearing capacity – loads – Types of foundations – requirements.**MODULE – II****Elements of Structures:** Superstructure – brick masonry – stone masonry – beams – columns – lintels – roofing – flooring – plastering – Types of Bridges and Dams.**MODULE - III****Elements of Surveying:** Surveying – Objects – types – classification – principles – measurements of distances – Determination of areas – Building area calculation – illustrative examples – Basics of Interior and Landscaping.**PART-B: BASIC MECHANICAL ENGINEERING****MODULE – I****Metal Forming and Joining Processes****Foundry:** Introduction- patterns – molding – casting - cupola furnace.**Forming:** Introduction-Classification- Rolling, extrusion, and drawing.**Welding:** Introduction-Classification - TIG, MIG welding, Gas welding, soldering and brazing.**Machining process:** Introduction-Classification – lathe and drilling machines.**MODULE – II****Boilers and Power Plants****Steam Boilers:** Introduction-Classification- Working Principle of Cochran boiler, Babcock and Wilcox boiler- Benson boiler - Boiler Mountings and accessories.**Power Plants:** Classification of power plants – working principle of steam, Diesel, Hydro-electric and Nuclear Power plants-Merits and Demerits.**MODULE – III****IC Engines, Refrigeration and Air-conditioning****IC Engines:** Classification-components - Working principle of Petrol and Diesel Engines- Four stroke and two stroke cycles- Comparison of four stroke and two stroke engines. Working principle of carburetor, fuel pump and multi point fuel injector.**Refrigeration and Air Conditioning System:** Terminology of Refrigeration and Air conditioning, Properties of refrigerant -Principle of vapour compression and absorption system - Layout of typical domestic refrigerator - Window and Split type room Air conditioner.**TOTAL : 45****TEXT BOOKS**

1. Palanichamy, M S., “Basic Civil Engineering”, Tata McGraw-Hill, New Delhi, 2006.
2. Shanmugam, G, “Basic Mechanical Engineering”, 4th Edition, Tata McGraw-Hill, New Delhi, 2011.

REFERENCE BOOKS

1. Rao, M.S., “Basics of Civil Engineering”, Dhanpat Rai and Co, New Delhi, 2006.
2. Venugopal, K and Prabhu Raja, V, “Basic Mechanical Engineering”, Sixth Edition, Anuradha Publishers, Kumbakonam, 2005.
3. Rao, P N, “Manufacturing Technology: Foundry, Forming And Welding”, Tata McGraw-Hill, New Delhi, 2008.
4. Rajan, T.S, “Basic Mechanical Engineering”, 3rd Edition, New Age International Publishers, New Delhi, 2009.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: select the suitable construction materials and foundation required for a building
 CO2: recall the various elements of the super structure
 CO3 point out the various elements of surveying and landscaping
 CO4 demonstrate the ability to describe the basics of metal forming and joining processes
 CO5 demonstrate the knowledge on patterns, molding, casting, rolling, extrusion, drawing, TIG, MIG welding, gas welding, soldering and brazing
 CO6 describe basics of boilers and power plants
 CO7 explain the working principle of steam, Diesel, Hydro-electric and Nuclear power plants
 CO8 demonstrate the working of IC engines, Refrigeration and Air-conditioning systems

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 2 | 2 | 1 | | | | | | |
| CO2 | 3 | 2 | 2 | 2 | 2 | 1 | | | | | | |
| CO3 | 3 | 2 | 2 | 2 | 2 | 1 | | | | | | |
| CO4 | 3 | | | | 2 | | | 1 | | | | 3 |
| CO5 | 3 | | | | 2 | | | 3 | | | | 2 |
| CO6: | 3 | | | | 2 | | | 1 | | | | 3 |
| CO7: | 3 | | | | 3 | | | 2 | | | | 3 |
| CO8: | 3 | | | | 2 | | | 1 | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11ME102 ENGINEERING DRAWING
(Common to all Engineering and Technology branches)

2 0 3 3

Concepts (Not for Exam)

Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.

MODULE – I

15

Projections of Points, Lines, Planes and Solids:

General principles of orthographic projection – First angle projection – Layout of views – Projection of points, located in all quadrant and straight lines located in the first quadrant – Determination of true lengths and true inclinations and location of traces – Projection of polygonal surface and circular lamina inclined to both reference planes.

Projections of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method.

MODULE – II

15

Sectioning and development of solids:

Sectioning of solids- prisms, pyramids, cylinder and cone in simple vertical position by cutting planes inclined to one reference plane and perpendicular to the other – Obtaining true shape of section.

Development of lateral surfaces of simple and truncated solids – prisms, pyramids, cylinders and cone with cutout, perpendicular and inclined to the horizontal axis.

MODULE- III

15

Isometric projection and Perspective projection:

Principles of isometric projection – isometric scale – isometric projections of simple solids, truncated prisms, pyramids, cylinders and cones

Conversion of isometric projection into orthographic projection.

Perspective projection of prisms, pyramids and cylinders by visual ray method.

TOTAL: 45

TEXT BOOKS

1. Venugopal K. and Prabhu Raja V. “Engineering Graphics”, New Age International (P) Limited, New Delhi, 2008.
2. Dhananjay A. Jolhe, “Engineering Drawing with an introduction to AutoCAD”, Tata McGraw Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Bhatt N.D, “Engineering Drawing”, 46th Edition, Charotar Publishing House, Anand, 2003.
2. Gopalakrishnana K.R., “Engineering Drawing”, Volume. I & II, Subhas Publications, Bangalore, 2006.
3. Basant Agarwal and Agarwal C.M., “Engineering Drawing”, Tata McGraw-Hill, New Delhi, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: prepare elementary sketches of 2D and 3D objects with correct interpretation and mark dimensions properly
- CO2: draw multi-view orthographic and other projections including isometric, sectional, true and perspective
- CO3: read, understand, interpret drawings and communicate effectively

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | | | 2 | | | | 3 | | | |
| CO2 | 3 | | | | 2 | | | | 2 | | | |
| CO3 | 3 | | | | 2 | | | | 2 | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

PART-A: APPLIED PHYSICS LABORATORY
(Any five experiments)

LIST OF EXPERIMENTS /EXERCISES

1. (a) Particle size determination using Diode Laser.
(b) Determination of Laser parameters – Wavelength and angle of divergence.
(c) Determination of acceptance angle in an optical fiber.
2. Determination of thickness of a thin wire – Air wedge method.
3. Determination of velocity of sound and compressibility of liquid – Ultrasonic interferometer.
4. Determination of specific resistance of a given coil of wire – Carey Foster Bridge.
5. Determination of dispersive power of a prism using spectrometer.
6. Determination of Young’s modulus of the material – non uniform bending.

PART-B: APPLIED CHEMISTRY LABORATORY
(Any five experiments)

LIST OF EXPERIMENTS /EXERCISES

1. Estimation of Total, Temporary and Permanent hardness of water by EDTA method.
2. Estimation of Ca²⁺ and Mg²⁺ hardness separately by EDTA method.
3. Estimation of Alkalinity of a water Sample.
4. Conductometric titration - Mixture of acids.
5. Estimation of Hydrochloric acid using PH meter.
6. Estimation of Ferrous ion by Potentiometric titration.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Get a basic idea of diode and LASER.
 CO2: Familiarize the concepts of Ultrasonic.
 CO3: Get a basic idea about the analysis of hardness, amount of Ca²⁺ and Mg²⁺, presence of alkalinity in water
 CO4: Get a basic idea about the handling of instruments like pH meter and conductivity meter for the estimation of unknown concentration of acids.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 2 | | | | | | 2 | | 1 |
| CO2 | 3 | 3 | | 2 | | | | | | 2 | | 1 |
| CO3 | 3 | 3 | | 2 | | | | | | 2 | | 1 |
| CO4 | 3 | 3 | | 2 | | | | | | 2 | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

PART-A: CIVIL & MECHANICAL

LIST OF EXPERIMENTS

1.FITTING

Tools & Equipments – Practice in Filing and Drilling.
Making Vee Joints, Square, dovetail joints, Key Making.

2. PLUMBING

Tools & Equipments - Pipe connection for a bath room, Pipe connection for multi-storey building, Pipe connection with different components like valves, tap, coupling, union, reducers, elbows etc. Plumbing work with metal, PVC and flexible hoses (Threading, joining of pipes)

3.CARPENTRY

Tools and Equipments- Planning practice. Making Half Lap, dovetail, Mortise & Tenon joints, a mini model of a single door window frame.

Making of Pen stand, Box, etc. from plywood. (Use of modern power tools for cutting)

4.SHEET METAL

Tools and equipments - Fabrication of a small cabinet, Rectangular Hopper, etc.

5.WELDING

Tools and equipments - Arc and Gas welding of butt joint, Lap Joint and Tee Fillet.

REFERENCES / MANUALS / SOFTWARE:

1. Suyambazhahan, S, “Engineering Practices Laboratory Manual”, PHI Learning, NewDelhi, 2010.
2. John, K. C., “Mechanical Workshop Practice”, Second Edition, PHI Learning, NewDelhi, 2009.

PART-B: ELECTRICAL & ELECTRONICS

1. Safety aspects of Electrical wiring.
2. Wiring circuit for a lamp using single and two way switches (stair case).
3. Wiring circuit for fluorescent lamp.
4. Study of Electronic components and equipment – Resistor-colour coding, measurement of AC Signal parameter (Peak-Peak, RMS Value, Frequency and Power factor) using CRO
5. Assembling electronic components on a small PCB (Etching, Fabrication and Testing)
6. Measurement of earth resistance and insulation resistance of an electrical equipment
7. Study of Telephone, FM radio & Transducers.
8. Study of Mixie, Iron box, Ceiling & Table Fans.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: understand the functions of different tools used in fitting, carpentry, sheet metals and welding.

CO2: prepare different types of joints in metal pieces, sheet metals and wooden pieces.

CO3: plan and fabricate simple models.

CO4: utilize the basic laboratory equipment

CO5: build the layout of domestic wiring circuits and troubleshoot it.

CO6: estimate Earth Resistance, assemble electronic components in PCB and understand operation of various domestic appliances

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | | | | | | 2 | | | 1 | |
| CO2 | 2 | | | | | | | 3 | | | 2 | |
| CO3 | 3 | | | | | | | 2 | | | 2 | |
| CO4 | 3 | | 1 | | 3 | | | | | | 2 | 3 |
| CO5 | 3 | 2 | | | 2 | 3 | | | | | | 3 |
| CO6 | 3 | | | | | 2 | | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11EL201 COMMUNICATION SKILLS
(Common to all Engineering and Technology branches)

3 0 0 3

MODULE – I

15

Focus on language: Cause and effect expressions - indicators of purpose and function - connectives -imperatives - modal verbs - infinitives and gerunds - reporting verbs - homonyms - commonly confused (mispronounced and misspelt) words - phrasal verbs - British and American Vocabulary.- rules for writing SI [system international] units - concord.

MODULE – II

15

Listening: Listening practice - Radio / TV news - documentaries - listening to short and long conversations in different domains of activity/ live speech - new inventions, products, announcements, casual conversation, and academic lectures.

Writing: Formal letter writing (letter of application - job application) , Business (calling for quotation, placing orders , letter of complaint) - structure of memorandum and technical reports (reports on visits made to industries, report on an accident in the factory, meeting report) – notices - agenda - instructions - e-mails - Preparing Checklist- note taking and note making.

MODULE- III

15

Speaking: Communication – accuracy, fluency, appropriateness – levels of formality – oral practice activities related to professional skills – role play using different functions (persuasion, negotiation, giving directions and guidance) – conversational etiquette (greetings, making requests, permission, accepting, denying, declining, politeness strategies, turn-taking, body language) – making speeches – describing people, place, things and events.

Reading: Reading comprehension – guided note- making – providing a suitable title - identifying main points, supporting ideas – evaluating the style (argumentative / descriptive etc) – drawing inferences separating facts from opinions – interpreting text in different genres.

TOTAL : 45

TEXT BOOK

- Department of Science and Humanities, Anna University, Chennai. “English for Engineers and Technologists”, Combined Edition Volumes (I & II), Orient Longman, Oxford University Press, New Delhi, 2006.

REFERENCE BOOKS

- Kiranmai. Dutt P, Geetha Rajeevan and Prakash, C. L. N., “A Course in Communication Skills”, Cambridge University Press, New Delhi, 2007.
- Meenakshi Raman and Sangeetha Sharma, “Technical Communication”, Oxford University Press, New Delhi, 2006.
- Sangeetha Sharma and Binod Mishra, “Communication Skills for Engineers and Scientists”, PHI Learning, New Delhi, 2009.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Improve their vocabulary and appropriate usage of words.
- CO2: Familiarize with different rhetorical functions of technical English.
- CO3: Speak effectively in English in real-life and career-related situations.
- CO4: Acquire knowledge in academic and professional writing.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | | | | | | | 2 | 3 | | 1 |
| CO2 | | | | | | | | | 2 | 3 | | |
| CO3 | | | | | | | | | 1 | 3 | | |
| CO4 | | | | 1 | | | | | 1 | 3 | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

15

Multiple Integrals: Double integration in Cartesian coordinates – Change of order of integration – Area between two curves – Area as double integrals – Triple integration in Cartesian coordinates – Volume as Triple integrals (Simple problems only).

Vector Calculus: Gradient, divergence and curl – Line, surface integral (Concept Only) and volume integrals (Concept Only) – Green’s, Gauss divergence and Stoke’s theorems (without proof) – Verification of the above theorems and evaluation of integrals using them (Simple problems only).

MODULE – II

15

Analytic Functions: Functions of a complex variable – Analytic functions – Necessary conditions and Sufficient conditions (excluding proof) – Cauchy– Riemann equations — Properties of analytic function (Statement only) –

1

Harmonic functions – Construction of Analytic functions – Conformal mapping: $w = z + a, az, \frac{1}{z}$ - Bilinear transformation.

Complex Integration: Cauchy’s theorem (without proof) – Cauchy’s integral formula – Taylor and Laurent’s series (without proof) – Singularities – Classification – Cauchy’s residue theorem (Statement only) – Contour integration – circular and semi-circular contours (excluding poles on real axis).

MODULE – III

15

Laplace Transforms: Conditions for existence – Transform of elementary functions – Basic properties – Derivatives and integrals of transforms – Transforms of derivatives and integrals – Initial and final value theorems – Transform of unit step function – Transform of periodic functions.

Inverse Laplace transforms: Inverse Transform of elementary functions – Partial fraction method – Convolution theorem (without proof) – Solution of linear ODE of second order with constant coefficients.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

1. Kandasamy. P, Thilagavathy. K and Gunavathy. K, “Engineering Mathematics For First Year B.E/B.Tech”, Reprint Edition 2011, S.Chand and Co., New Delhi.
2. Veeraranjan. T., “Engineering Mathematics, (for first year), Reprint Edition 2011, Tata McGraw-Hill New Delhi.

REFERENCE BOOKS

1. Grewal. B.S, “Higher Engineering Mathematics”, 40th Edition, Khanna Publications, New Delhi, 2007.
2. Jain R.K and Iyengar S.R.K, “Advanced Engineering Mathematics”, Third Edition, Narosa Publishing House, New Delhi, 2007.
3. Bali. N.P and Manish Goyal, “Text Book of Engineering Mathematics”, Third Edition, Laxmi Publications, New Delhi, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Identify problems involving vectors, double and triple integrals
- CO2: Measure the knowledge of analytic functions.
- CO3: Evaluate complex integrals which are extensively applied in engineering.
- CO4: Adapt Laplace transforms to solve practical problems.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 1 | 2 | | | | | | | 1 |
| CO2 | 3 | | | | | | | | | | | 1 |
| CO3 | 3 | 3 | | 1 | 2 | | | | | | | 1 |
| CO4 | 3 | 3 | | 1 | 2 | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11PH201 MATERIALS SCIENCE
(Common to all Engineering and Technology branches)

3 0 0 3

MODULE – I

15

Crystal Physics: Introduction – Lattice – Unit cell – Crystal systems – Bravais lattice – Lattice planes – Miller indices – d spacing in cubic lattice – Atomic radius – Coordination number – Packing factor for SC, BCC, FCC and HCP structures – Crystal imperfections : Point, line and surface imperfections.

Conducting Materials: Conductors – Classical free electron theory of metals – Electrical and thermal conductivity – Wiedemann – Franz law – Lorentz number – Draw backs of classical theory – Quantum theory – Fermi distribution function – Effect of temperature on Fermi Function – Density of energy states – Carrier concentration in metals.

MODULE – II

15

Semiconducting Materials: Intrinsic semiconductor – Carrier concentration derivation – Extrinsic semiconductors – Carrier concentration derivation in n-type and p-type semiconductors – Hall effect – Determination of Hall coefficient – Applications - Semiconductor devices – Solar cells - LDR.

Magnetic and Dielectric Materials: Types of magnetic materials – Domain theory – Hysteresis – Soft and hard magnetic materials - Magnetic devices – Transformer core - Magneto optical recording - Dielectric constant - Qualitative study of polarization – Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – Uses of dielectric materials (capacitor and transformer) – Ferro electric materials.

MODULE- III

15

Smart Materials : Metallic glasses: Preparation, properties and applications - Shape memory alloys (SMA): Characteristics, properties, applications, advantages and disadvantages of SMA – Superconductors: Properties – Types of superconductors – BCS theory of superconductivity(Qualitative) - High T_c superconductors – Applications of superconductors – SQUID – cryotron - magnetic levitation.

Nano Materials: Synthesis: Lithographics – Vapour phase physical and chemical deposition methods - Colloidal and solgel methods - Properties of nanoparticles and applications - Carbon nanotubes: Structure – Properties – Fabrication by Laser ablation – Applications.

TOTAL : 45

TEXT BOOKS

1. Kittel. Charles, “Introduction to Solid State Physics”, Seventh Edition, John Wiley & sons, Singapore, 2007.
2. Poole. Charles P and Ownen. Frank J., “Introduction to Nanotechnology”, Wiley India, 2007. (For Module III).

REFERENCE BOOKS

1. Pillai. S O, “Solid State Physics”, Fifth Edition, New Age International, New Delhi, 2003.
2. Rajendran. V, “Engineering Physics”, Prentice Hall of India, New Delhi, 2008.
3. Palanisamy. P K, “Engineering Physics - II”, SciTech publications (India), Chennai 2008.
4. Raghavan. V, “Materials Science and Engineering: A first course”, Fifth Edition, Prentice Hall of India, New Delhi, 2009.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Infer the basics of crystal physics and conducting materials.

CO2: Apply the concepts of semiconducting materials, devices, and magnetic and dielectric materials in engineering and technology.

CO3: Interpret the preparation and applications of smart materials and nano materials.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 2 | | | | | | 1 | | 1 |
| CO2 | 3 | 3 | | 2 | | | | | | 1 | | 1 |
| CO3 | 3 | 3 | | 2 | | | | | | 1 | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

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, dams - benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture - effects of modern agriculture, fertilizer and pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, case studies – Land resources: Land as a resource – Conservation Practices - Role of an individual in conservation of natural resources. **Ecosystems:** Concept of an ecosystem – Structural features – Functional attributes (Food chain and Food web only) – Introduction, types, characteristic features, structure and functions of the (a) Forest ecosystem (b) Aquatic ecosystems (ponds, rivers and oceans). **Biodiversity:** Introduction to Biodiversity – Definition - genetic, species and ecosystem diversity – Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic, option values and ecosystem service value– Hot-spots of biodiversity – Threats to biodiversity: habitat loss, poaching of wildlife – Endangered and endemic species of India – In-situ and Ex-situ conservation of biodiversity.

15

MODULE – II

Pollution: Definition – Causes, effects and control measures of: (a) Air pollution - Climate change, global warming, acid rain, ozone layer depletion (b) Water pollution (c) Soil pollution (d) Radioactive Pollution - Solid waste Management - Disaster management: floods, earthquake, cyclones and landslides - 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 –Estimation of dissolved oxygen, BOD and COD - Bacteriological examination of water - Sewage treatment (Primary, Secondary & Tertiary methods) - Miscellaneous methods of Sewage treatments (Oxidation Ponds, Aerated Lagoons, Oxidation ditch, Anaerobic Lagoons, Septic tanks) – Methods of Sewage treatment by activated sludge process – Introduction to industrial waste water treatment using Reverse Osmosis Technology- Self purification of Natural Waters - Membrane Technology for wastewater treatment - Activated carbon in pollution abatement of wastewater.

15

MODULE- III

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 - Wasteland reclamation – Consumerism and waste products – Environment Protection 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 Anubha Kaushik, and Kaushik C P, “Environmental Science and Engineering”, Third Edition: 2008, (Reprint 2010), New Age International (P) Ltd, New Delhi.

REFERENCE BOOKS

- 1 B.K.Sharma, “ Industrial Chemistry”, Tenth Edition, Krishna Prakashan Media(P) Ltd, Meerut-250001(UP), India.
- 2 B Uppal M M revised by S C Bhatia, “Environmental Chemistry”, Sixth Edition Khanna Publishers, New Delhi, 2002.
- 3 Trivedi R.K. and Goel P. K., “Introduction to Air Pollution”, Techno-Science Publications, Jaipur, 2003.
- 4 Masters. Gilbert M, “Introduction to Environmental Engineering and Science”, Second Edition, Pearson Education, New Delhi, 2004.
- 5 Miller, T.G., “Environmental Science”, Wadsworth Publishing Co.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Represent the importance of conservation of natural resources and gain the basic knowledge of maintaining ecological balance and conservation of biodiversity
- CO2: Comprehend the different types of pollution and waste water treatment methods
- CO3: Represent the awareness about making a clean environment and useful environment for the future generations, Consequences of population explosion and Social Issues

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | | | | | 2 | 3 | 3 | | 3 | | 2 |
| CO2 | 3 | 2 | | | | 2 | 3 | 3 | | 3 | | 2 |
| CO3 | 3 | 2 | | | | 2 | 3 | 3 | | 3 | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS101 PROBLEM SOLVING AND PROGRAMMING
(Common to all Engineering and Technology branches)

3 0 0 3

MODULE – I

15

Basics: Evolution of computers- Generations of computers- Classification of computers- Applications of computers- Hardware - Software-Information Technology-Internet Problem-Solving Techniques- Program Control Structures- Programming Paradigms and Languages-Generations of Programming Languages.

Problem Solving: Introduction – Problem Solving Aspects- Top-Down Design-Implementation of Algorithms-Program Verification- Efficiency of Algorithms- Analysis of Algorithms- Fundamental algorithm- Factorial Computation - Generation of Fibonacci Sequence.

MODULE – II

15

C Fundamentals and Arrays: Introduction to C – C programming structure – C character set – Identifiers – keywords. Data types – Constants – variables- Operators – Expressions – Library functions Managing Input and Output – formatted input and output. Control statements – Decision making and branching – Looping structures- Arrays – One dimensional array – Two dimensional arrays – Multidimensional arrays. Character arrays and strings.

MODULE - III

15

Functions, Structures and Files: Functions - User defined functions: declaration, definition function call and parameter passing mechanisms – Recursion –Array and Functions - User defined data types –typedef - Structures – Unions –File operations in C- Introduction to pointer –Pointer Declaration and Initialization-Accessing a Variable through a pointer- Difference between array and Pointers.

TOTAL : 45

TEXT BOOKS

1. Kamthane, Ashok N. “Computer Programming”, Pearson Education, New Delhi, 2007.
2. Dromey, R.G., “How to solve it by Computers”, Pearson Publishers, New Delhi, 2007.

REFERENCE BOOKS

1. Gottfried Byron S, “Programming with C”, Second Edition, Tata McGraw-Hill, New Delhi, 2006.
2. Kanetkar Yashavant P., “Let us C”, Fifth Edition, BPB publications, New Delhi, 2005.
3. Schildt Herbert, “The Complete Reference C”, Fourth Edition, Tata McGraw-Hill, New Delhi, 2000.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Outline the changes in hardware and software technologies with respect to evolution of computers and programming languages
- CO2: Apply fundamental principles of problem solving techniques
- CO3: Develop programs using basic programming principles of C language
- CO4: Design simple applications using structured programming techniques and file concepts

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | | | | | | | | | | 3 |
| CO2 | 3 | 3 | 3 | | 2 | | | | | | | 2 |
| CO3 | 3 | 3 | 2 | 1 | | | | | | | | 2 |
| CO4 | 3 | 3 | 3 | 1 | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11EE101 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to Civil, Mechanical, Chemical, Food Technology, Computer Science and Information Technology branches)

3 0 0 3

MODULE – I

15

Electrical Systems: Kirchhoff's Laws – Resistors in series and Parallel, Voltage and Current division Rule, Mesh Analysis of Simple Resistive networks – Introduction to AC Circuits – Sinusoidal Voltage, Current, R.M.S and Average value.

Power System: Introduction- Structure of electric power system- Transmission and Distribution systems – Various levels of Transmission and Distribution Voltages.

Electrical Machines: DC Machines Construction, Principle of Operation, Basic Equation and Applications of: DC Generators (EMF equation), DC Motors (Torque equation).

MODULE – II

15

AC Machines: Single Phase Transformer- Construction and Working Principle of Three Phase Induction Motors- Single Phase Induction Motors: Split Phase and Capacitor Start Motors.

Semiconductor Devices and Applications: Semiconductors and Junction Diodes : Distinction between Conductors, Semiconductors and Insulators – Properties of Semiconductors – PN Junction Diode- Rectifiers and Filters- Zener Diodes – Zener Diode Voltage Regulator– LEDs. Junction Transistors: Principle of Operation – CE,CB and CC Configurations – Static Characteristics – CE Transistor as an Amplifier – Characteristics and Applications of SCR and UJT.

Digital Electronics: Introduction– Binary Number Systems and Conversions – Binary Addition and Subtraction -Logic Gates and Truth tables.

MODULE - III

15

Digital Electronics: Boolean Algebra: Basic laws and Demorgan's theorem – Simplification of Boolean Functions —Full Adder and Full Subtractor – Flip-Flops: RS,JK,D and T – Counter: 4 Bit Binary Ripple Counter.

Linear IC'S: OPAMPS: – Ideal Characteristics –Applications of OP-Amps: Inverting and Non-Inverting Amplifier, Voltage Follower, Adder and Subtractor.

Fundamentals of Communication Engineering: Introduction – Need for Modulation – Amplitude Modulation – Frequency Modulation – Comparison of AM & FM Communication Systems (Block Diagram approach): Radio, TV: Standards, Transmitter and Receiver- Satellite and Optical Fibre Communication

Powersupplies (Block Diagram Approach) : Regulators, UPS and SMPS

TOTAL : 45

TEXT BOOKS

1. Hughes Edward., Smith Mckenzie., Hiley John and Brown Keith., "Electrical and Electronic Technology", 9th Edition, Pearson Education, New Delhi.
2. Muthusubramanian, Salivahanan R.S. and Muraleedharan K.A., "Basic Electrical, Electronics and Computer Engineering", Tata McGraw-Hill, New Delhi, 2007.

REFERENCE BOOKS

1. Millman and Halkias, "Integrated Electronics", Tata McGraw-Hill, New Delhi, 1998.
2. Kennedy, David, "Electronic Communication Systems", Tata McGraw – Hill, New Delhi, 2000.
3. Gayakward, Ramakant A. "Op-Amps and Linear Integrated Circuits", Pearson Education, New Delhi, 2002.
4. Metha, V.K and Rohit Mehta, "Principles of Power System", S. Chand & Company Ltd., New Delhi, 2006.
5. Smarajit Ghosh, "Electrical and Electronics Engineering", Second Edition, Prentice Hall of India, New Delhi, 2009.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Develop a basic understanding of the concept of electrical systems

CO2: Illustrate the construction and working of different types of electric machines

CO3: Gain basic knowledge of analog and digital electronics

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | | | | | | | | | 1 |
| CO2 | 3 | 1 | | | | | | | | | | 1 |
| CO3 | 3 | | | | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11PH202 PHYSICAL SCIENCES LABORATORY – II
(Common to all Engineering and Technology branches)

0 0 3 1

PART - A: APPLIED PHYSICS LABORATORY
(Any five experiments)

LIST OF EXPERIMENTS /EXERCISES

1. Determination of band gap of a semiconductor material.
2. Determination of wavelength of mercury spectrum – spectrometer grating.
3. Determination of thermal conductivity of a bad conductor – Lee’s Disc method.
4. Determination of hysteresis loss in a ferromagnetic material.
5. Determination of Young’s modulus of the material – uniform bending.
6. Determination of viscosity of liquid – Poiseuille’s method.

PART - B: APPLIED CHEMISTRY LABORATORY
(Any five experiments)

LIST OF EXPERIMENTS /EXERCISES

1. Estimation of Chloride in a given water sample.
2. Determination of Dissolved Oxygen in a sample of water / sewage.
3. Estimation of Chromium in Industrial waste water.
4. Estimation of Ferrous ion in rust solution.
5. Estimation of percentage of Copper present in brass.
6. Estimation of ferric ion by Spectrophotometric method.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Perform experiments on semiconductors, thermal conductivity, optics, elasticity, viscosity of liquids.
- CO2: Understand the concepts of wavelength, band gap, thermal conductivity, Young’s modulus and viscosity.
- CO3: Estimate the amount of DO and chloride in a given water sample
- CO4: Determine the amount of chromium, ferrous ion and copper in wastewater

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 2 | | | | | | 3 | | 1 |
| CO2 | 3 | 3 | | 2 | | | | | | 3 | | 1 |
| CO3 | 3 | 3 | | 2 | | | | | | 3 | | 1 |
| CO4 | 3 | 3 | | 2 | | | | | | 3 | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

A) APPLICATION PACKAGES

1. To create an advertisement using word
2. To illustrate the concept of mail merging using word
3. To create a spread sheet to analyse the marks of the students of a class and also to create appropriate charts using excel
4. To create the presentation for the department using power point
5. To create the presentation for digital computers using power point

B) C PROGRAMMING (ANY TWO PROGRAMS IN EACH SECTION)

6. Simple programs using decision making and branching:
 - a. Program to find biggest of three numbers
 - b. Design of simple menu driven calculator
 - c. Program to find the roots of the quadratic equation
 - d. Program to convert the given decimal number to binary
 - e. Program to print the prime numbers between 100 to 500
 - f. Program to print the electricity bill in a specified format applying specified rules
7. Programs using arrays:
 - a. Program to find the biggest number in the array
 - b. Menu driven program to insert and delete a specified element from the array
 - c. Program to arranged the elements of the array in ascending order
 - d. Program to merge given two one dimensional arrays and to remove the duplicates
 - e. Program for multiplication of two matrices
8. String manipulations:
 - a. Program to find the length of the string, copy one string to another and compare two strings, concatenate two strings without using library functions.
 - b. Program to check whether the given string is a palindrome or not without reversing
 - c. Program to find the occurrence of a substring in a main string and replace the substring by another string.
 - d. Arranging the list of names in alphabetical order
 - e. Program to count the number of occurrences of vowels, consonants, words, white spaces and special characters in the given statement.
9. Functions:
 - a. Program to swap the contents of two variables using functions (Pass by address and pass by reference)
 - b. Program to print the Fibonacci series using recursive function
 - c. Program to print the average and standard deviation of the elements of the one - dimensional array using function.
 - d. Program to print the transpose of a matrix using functions
 - e. Menu driven program to perform string operations using functions
10. Structures and file operations:
 - a. Define a structure to store the student details viz., Roll no, name, marks in three subjects, total, avg and class obtained. Read the first three fields and write your logic to calculate the total, average and class obtained for ten students. Print the results in the order of ran obtained.
 - b. Structure based program to print the pay slip of an employee.
 - c. Program using files to copy the contents of one file to another

REFERENCES / MANUALS/SOFTWARE:

Software requirements

Operating System : Windows / Linux, Compiler : C compiler, Packages: MS office or Equivalent

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Utilize the features of MS office package to create documents, presentation and reports
- CO2: Write and execute programs to illustrate decision making and branching
- CO3: Develop programs using 1D and 2D arrays
- CO4: Create programs for manipulating strings
- CO5: Demonstrate the use of functions and structures to develop applications

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | | | 3 | | | | | | | 1 |
| CO2 | | 2 | 2 | 2 | | | | | | | | 1 |
| CO3 | | 2 | 2 | 2 | | | | | | | | 1 |
| CO4 | | 2 | 2 | 2 | | | | | | | | 1 |
| CO5 | | 3 | 3 | 3 | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Verification of Ohm's Laws and Kirchoff's Laws.
2. Measurement of real power, reactive power, power factor and impedance of RC, RL and RLC Circuits.
3. Open circuit and load characteristics of DC shunt generator.
4. Load characteristics of single phase Transformer.
5. Forward and Reverse characteristics of PN diode and Zener Diode.
6. Implementation of Half wave and Full wave Rectifier with simple Capacitor Filter.
7. Input and Output characteristics of BJT in Common Emitter configuration.
8. Characteristics of UJT and SCR.
9. Verification of truth table for various Logic Gates.
10. Design and verification of Half adder, Full adder, Half subtractor and Full subtractor.
11. Verification of Flip Flops (RS, JK, D and T flip Flops).
12. Implementation and Verification of BCD Decade Counter.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Analyze the characteristics of basic electrical circuits and electrical machines

CO2: Design and analyze basic electronic and digital electronics circuits

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | | 3 | | | | | | | | |
| CO2 | 3 | | | | | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

11MA301 ENGINEERING MATHEMATICS – III
(Common to all Engineering and Technology branches)

3 1 0 4
15

MODULE – I

Fourier Series: Dirichlet’s conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Change of interval - Parseval’s Identity - Harmonic analysis.

MODULE - II

Partial Differential Equations: Formation – By elimination of arbitrary constants and arbitrary functions – Standard types– Lagrange’s linear equation- Linear partial differential equations of second order with constant coefficients.
Applications of Partial Differential Equations: Classification of second order quasi linear partial differential equations – Solutions of one dimensional wave equation – One dimensional heat equation – Steady state solution of two-dimensional heat equation (Insulated edges excluded).

MODULE - III

Fourier transform: Fourier integral theorem (Statement only) – Fourier transform pair – Properties – Transforms of simple functions – Sine and Cosine transforms – Convolution theorem and Parseval’s identity (Statement only).
Z-transform: Elementary properties – Transforms of simple functions - Inverse Z – transform(Partial Fraction Method and Residue method) – Convolution theorem (Statement Only) – Solution of Difference Equations.

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOKS

1. Kandasamy, P., Thilagavathy, K., and Gunavathy, K., “Engineering Mathematics”, Volume - III, S. Chand & Co, New Delhi, 2008.
2. Veerarajan, T., “Engineering Mathematics”, Tata McGraw-Hill, New Delhi, Reprint 2010.

REFERENCE BOOKS

1. Grewal, B.S., “Higher Engineering Mathematics”, Thirty Sixth Edition, Khanna Publishers, New Delhi, 2007.
2. Wylie, C. Ray and Barrett, Louis, C., “Advanced Engineering Mathematics”, Sixth Edition, McGraw-Hill, New York, 2004.
3. Andrews, L. A. and Shivamoggi, B. K., “Integral Transforms for Engineers and Applied Mathematicians”, Macmillan, New York, 2004.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Utilize Fourier series to solve engineering problems.
- CO2: Formulate and solve higher order partial differential equations.
- CO3: Interpret the basic knowledge of Fourier transforms and Z-transforms in engineering field.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 1 | 2 | | | | | | | 1 |
| CO2 | 3 | 3 | | 2 | 2 | | | | | | | 1 |
| CO3 | 3 | 3 | | 1 | 2 | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11EC301 DIGITAL ELECTRONICS
(Common to ECE, CSE and IT branches)

3 1 0 4
15

MODULE – I

Number Systems: Binary, Octal, Decimal, Hexadecimal Number systems – complements – signed Binary numbers. Binary Arithmetic- Binary codes: Weighted –BCD-2421-Gray code-Excess 3 code-ASCII –EBCDIC.

Boolean algebra: Boolean postulates and laws –De-Morgan’s Theorem- Principle of Duality- Boolean expression – Boolean function- Minimization of Boolean expressions– Sum of Products (SOP) –Product of Sums (POS)-Minterm-Maxterm- Canonical forms – Conversion between canonical forms –Minimization: Karnaugh map, Tabulation Method-Don’t care conditions. Logic Gates- Implementations of Logic Functions using gates, NAND –NOR implementations. TTL and CMOS Logic and their characteristics –Tristate gates

MODULE - II

15

Combinational Circuits: Design procedure of Combinational circuits:– Adders-Subtractors – Parallel adder/ Subtractor-Carry look ahead adder- BCD adder- Magnitude Comparator- Multiplexer/ Demultiplexer- encoder / decoder – parity generator and checker – code converters. Implementation of combinational logic using decoders and multiplexers.

Synchronous sequential Circuits: Flip flops SR, JK, T, D and Master slave – Characteristic and excitation tables and equations –Level and Edge Triggering –Realization of one flip flop using other flip flops – Analysis and design of sequential circuits with state diagram, State table, State minimization and State assignment-Ripple counters –Design of Synchronous counters, Ring counters and Sequence detector - Registers – shift registers- Universal shift register.

MODULE - III

15

Asynchronous sequential Circuits: Design of fundamental mode and pulse mode circuits – primitive state / flow table – Minimization of primitive state table –state assignment – Excitation table - cycles – Races –Hazards: Static –Dynamic – Essential –Hazards elimination.

Memory Devices: Classification of memories –RAM organization – Write operation –Read operation – Memory cycle - Timing wave forms – Memory decoding – memory expansion – Static RAM Cell-Bipolar RAM cell – MOSFET RAM cell –Dynamic RAM cell -SDRAM–ROM organization –Field Programmable Gate Arrays (FPGA)- Flash memory-NOR Flash memory cell- NAND Flash memory cell- Programmable Logic Devices –Programmable Logic Array (PLA)-Programmable Array Logic (PAL)

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOKS

1. Morris Mano, M, “Digital Design”, Third Edition, Prentice Hall of India, New Delhi, 2003.
2. Roth Charles H., “Fundamentals of Logic Design”, Thomson Publication Company, New Delhi, 2003.

REFERENCE BOOKS

1. Yarbrough, John M., “Digital Logic Applications and Design”, Thomson Publications, New Delhi, 2007.
2. Leach, Donald P. and Malvino, Albert Paul., “Digital Principles and Applications”, Fifth Edition, Tata McGraw-Hill, New Delhi, 2003.
3. Givone, Donald D., “Digital Principles and Design”, Tata McGraw-Hill, New Delhi, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Understand numerical representation in digital logic and the corresponding design of arithmetic circuitry
- CO2: Design combinational and sequential digital circuits
- CO3: Represent logic functions in multiple forms
- CO4: Understand the concept of storing the data in different memory devices and differentiate between them.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | 3 | | 2 | | | | | | | 2 |
| CO2 | 3 | | 3 | | 2 | | | | | | | 2 |
| CO3 | 3 | | 3 | | 2 | | | | | | | 1 |
| CO4 | 3 | | | | 1 | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS301 DATA STRUCTURES AND ALGORITHMS
(Common to EIE and CSE branches)

3 1 0 4

MODULE – I

Linear Structures : Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT Trees-Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Hashing – General Idea – Hash Function – Separate Chaining – Open Addressing – Linear Probing

15

MODULE - II

Tree Structure and Sorting: Priority Queues (Heaps) – Model – Simple implementations – Binary Heap-d Heaps. Sorting-Preliminaries – Insertion Sort – Shellsort – Heapsort – Mergesort – Quicksort – External Sorting

15

MODULE - III

Graphs: Graphs-Definitions – Topological Sort – Shortest-Path Algorithms – Unweighted Shortest Paths – Dijkstra’s Algorithm – Minimum Spanning Tree – Prim’s Algorithm – Applications of Depth-First Search – Undirected Graphs – Biconnectivity – Introduction to NP-Completeness

15

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

- Weiss M. A., “Data Structures and Algorithm Analysis in C”, 3rd edition, Pearson Education Asia, New Delhi, 2006.
- Aho A.V., Hopcroft, J.E. and Ullman J.D., “Data Structures and Algorithms”, Pearson Education, New Delhi, 2003.

REFERENCE BOOKS

- Langsam, Y., M., Augenstein J. and Tenenbaum, A. M., “Data Structures using C”, Pearson Education Asia, New Delhi, 2004.
- Baase Sara and Van Gelder Allen, “Computer Algorithms: Introduction to Design and Analysis”, Pearson Education Asia, New Delhi, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Describe the fundamental concepts of data structures

CO2: Devise and compare various searching and sorting algorithms

CO3: Summarize the various graph theoretic algorithms.

CO4: Identify relevant data structure and solve the given problem

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | | | | | | | | | 3 |
| CO2 | | 2 | | | | | | | | | | 1 |
| CO3 | 3 | 3 | | | | | | | | | | 3 |
| CO4 | 3 | 2 | | | | | | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

15

Introduction to OOP and Basics of C++: Object oriented programming concepts – objects – classes-methods and messages – abstraction and encapsulation – inheritance – abstract classes – polymorphism.

Introduction to C++ – classes – access specifiers – function and data members – default arguments – function overloading – friend functions – const and volatile functions - static members – Objects – pointers and objects – constant objects – nested classes – local classes - Constructors – default constructor – Parameterized constructors – Constructor with dynamic allocation – copy constructor – destructors.

MODULE - II

15

Inheritance and Polymorphism: Operator overloading – overloading through friend functions – overloading the assignment operator – type conversion – explicit constructor - Inheritance – public, private, and protected derivations – multiple inheritance - virtual base class – abstract class– composite objects Runtime polymorphism – virtual functions – pure virtual functions – RTTI – typeid – dynamic casting – RTTI and templates – cross casting – down casting.

MODULE - III

15

Templates, Exception Handling and Files: Function and class templates - Exception handling – try-catch-throw paradigm – exception specification – terminate and Unexpected functions – Uncaught exception- Streams and formatted I/O – I/O manipulators - file handling – random access – object serialization – namespaces - std namespace – ANSI String Objects – standard template library

TOTAL : 45

TEXT BOOK

1. Trivedi, B., “Programming with ANSI C++”, Oxford University Press, Oxford, 2007.

REFERENCE BOOKS

1. Eckel B. and Allison C, “Thinking in C++ volume Two: Practical Programming”, Pearson Education, New Delhi, 2004.
2. Lippman S. B, Lajoie Josee and Moo Barbara E., “C++ Primer”, Fourth Edition, Pearson Education, New Delhi, 2005.
3. Stroustrup B., “The C++ Programming language”, Third edition, Pearson Education, New Delhi, 2004.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Describe the concepts of object-oriented programming

CO2: Apply the concepts of data encapsulation, inheritance, and polymorphism to develop simple application

CO3: Utilize the features of templates, exception and file handling mechanisms

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 3 | 3 | | | | | | | | | 1 |
| CO2 | 1 | 3 | 3 | | | | | | | | | 1 |
| CO3 | | 3 | 3 | | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

15

Basic Structure of Computers: Functional units - Basic operational concepts - Bus structures – Software performance – Memory locations and addresses – Memory operations – Instruction and instruction sequencing – Addressing modes – Assembly language – Basic I/O Operations – Stacks and queues.

Arithmetic Unit: Addition and subtraction of signed numbers – Design of fast adders – Multiplication of positive numbers - Signed operand multiplication and fast multiplication – Integer Division – Floating point numbers and operations.

MODULE - II

15

Basic Processing Unit: Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Microprogrammed control - Pipelining – Basic concepts – Data hazards – Instruction hazards – Influence on Instruction sets – Data path and control consideration – Superscalar operation.

MODULE - III

15

Memory System: Basic concepts – Semiconductor RAMs - ROMs – Speed - size and cost – Cache memories - Performance consideration – Virtual memory- Memory Management requirements – Secondary storage.

I/O Organization: Accessing I/O devices – Interrupts – Direct Memory Access – Buses – Interface Circuits – Standard I/O Interfaces (USB).

TOTAL : 45

TEXT BOOKS

1. Hamacher, Carl, Vranesic, Zvonko and Zaky, Safwat., “Computer Organization”, Fifth Edition, McGraw Hill, New York, 2002.
2. Hayes, John P., “Computer Architecture and Organization”, Third Edition, Tata McGraw-Hill, New York, 1998.

REFERENCE BOOKS

1. Patterson, David A. and Hennessy, John L., “Computer Organization and Design: The Hardware/Software Interface”, Third Edition, Elsevier, Amsterdam, 2005.
2. Stallings, William., “Computer Organization and Architecture: Designing for Performance”, Sixth Edition, Pearson Education, New Delhi, 2003.
3. Heuring, V.P and Jordan, H.F., “Computer Systems Design and Architecture”, Second Edition, Pearson Education, New Delhi, 2004.

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Demonstrate the basic structure and operation of a digital computer.

CO2: Appraise the concept of pipelining and its associated hazards.

CO3: Summarize the performance of various memory and I/O management techniques.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | | | | | | | | | 2 |
| CO2 | 1 | 3 | 1 | | | | | | | | | 1 |
| CO3 | 1 | 3 | 2 | | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I

15

Process Models and Requirement Analysis: A Generic view of processes – Process models: Waterfall models, Incremental models, Evolutionary models, Specialized models – Agile process and models – System engineering, Requirement engineering: tasks, Initiating the process, Eliciting requirements, Developing use cases – Negotiating requirements – Validating requirements – Building the analysis models: Concepts – Object oriented analysis – Scenario based modeling – Data & Control flow oriented model – Class based model – Behavioral model.

MODULE - II

15

Software Design: Design concepts – Design models – Pattern based design – Pattern analysis and design – Pattern catalogs – Architectural design –Architectural styles – Component level design – Class based and conventional components design – Real-time system design – User interface design – Human computer interface design- Object-oriented design: Objects and object classes, An object oriented design process, Design evolution.

MODULE - III

15

Software Testing and Software Project Management: Software testing – Strategies – Issues – Test strategies for conventional and object oriented software – Validation and system testing – Debugging - Testing tactics: White box testing, Basis path testing – Control structure testing – Black box testing - Object oriented testing – Testing GUI – Testing client/server – Test documentation – Estimation - Project scheduling - Risk management - Change management.

TOTAL : 45

TEXT BOOKS

1. Pressman, Roger S., “Software Engineering: A Practitioner’s Approach”, Sixth Edition, McGraw-Hill, New York, 2008.
2. Sommerville, I, “Software Engineering”, Eighth Edition, Addison Wesley, New York, 2008.

REFERENCE BOOKS

1. Jalote, Pankaj, “An Integrated Approach to Software Engineering”, Third edition, Narosa Publishing House, New Delhi, 2008.
2. Ghezzi, Et al, “Fundamental of Software Engineering”, Second Edition, Prentice Hall of India, New Delhi, 2009.
3. SWEBOK, “Guide to the Software Engineering Body of Knowledge”, A project of the IEEE Computer Society Professional Practices Committee, 2004.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Describe key aspects of process models and identify a suitable model for a software system.
- CO2: Identify the tasks in requirement engineering and describe several analysis models
- CO3: Summarize different methods for the design of a software system
- CO4: Illustrate testing methods and project management aspects of software development.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 3 | | | 2 | | | 2 | | | |
| CO2 | | 3 | 3 | | | 3 | | | 3 | | | |
| CO3 | | 2 | 3 | | | 3 | 3 | | 2 | | | 2 |
| CO4 | | 2 | 3 | | | 2 | | | 3 | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Linked list implementation of Stack ADT
2. Infix to Postfix Conversion Using Stack
3. Implement the application for 'Evaluating Postfix Expressions' using array of Stack ADT
4. Queue ADT
5. Implementation of Singly Linked List and Doubly Linked List
6. Implementation of Binary Search Tree
7. Array based Implementation of Circular Queue
8. Quick Sort
9. Heap Sort
10. Implementation of Dijkstra's Algorithm to find Shortest Path

REFERENCES / MANUALS /SOFTWARE :

1. Windows-Operating System
2. C -Compiler

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Develop programs to implement different data structures and related algorithms
- CO2: Apply appropriate data structures for solving computing problems
- CO3: Implement sorting and searching techniques

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 2 | 3 | | | | | | | | 2 |
| CO2 | | 3 | 2 | 3 | | | | | | | | 2 |
| CO3 | | 3 | 2 | 3 | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS

1. Verification of Boolean theorems using digital logic gates.
2. Design and implementation of combinational circuits using basic gates and universal gates for arbitrary functions.
3. Design and implementation of code converters.
4. Design and implementation of 4-bit binary adder / subtractor using basic gates and MSI devices.
5. Design and implementation of parity generator / checker using basic gates and MSI devices.
6. Design and implementation of magnitude comparator.
7. Design and implementation of multiplexers and Demultiplexers.
8. Design and implementation of Decoders and Encoders.
9. Verification of operation of flip-flops.
10. Design and implementation of Shift registers in SISO, SIPO, PISO, PIPO modes using suitable IC's.
11. Design and implementation of Synchronous counters.
12. Design and implementation of Asynchronous counters.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Understand the basic Boolean Theorem and Logic Gates.
- CO2: Design, Construct and Test the different digital circuits.
- CO3: Understand, design and implement the synchronous and asynchronous circuits

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | | | | | | | | | 2 |
| CO2 | 3 | 3 | 2 | | | | | | | | | 2 |
| CO3 | 3 | 3 | 2 | | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Design C++ classes with data members and methods using an array.
2. Design C++ classes with static members, methods with default arguments, friend functions.
(For example, design matrix and vector classes with static allocation, and a friend function to do matrix-vector multiplication)
3. Implement complex number class with necessary operator overloadings and type conversions such as integer to complex, double to complex, complex to double etc.
4. Implement Matrix class with dynamic memory allocation and necessary methods.
5. Give proper constructor, destructor, copy constructor, and overloading of assignment operator.
6. Overload the new and delete operators to provide custom dynamic allocation of memory.
7. Develop a template of stack and queue and its methods.
8. Develop templates of standard sorting algorithms such as bubble sort, insertion sort.
9. Design stack and queue classes with necessary exception handling.
10. Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse,
Design a simple test application to demonstrate Triangle, Polygon, etc. dynamic polymorphism and RTTI.
11. Write a C++ program that randomly generates complex numbers (use previously designed Complex class) and writes them two per line in a file along with an operator (+, -, *, or /).
The numbers are written to file in the format (a + ib). Write another program to read one line at a time from this file, perform the corresponding operation on the two complex numbers read, and write the result to another file (one per line).

REFERENCES / MANUALS/SOFTWARE:

1. Windows-Operating System
2. C ++-Compiler

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Identify and create objects and their members for a given problem
- CO2: Experiment the use of friend function, static function, constructor and destructor
- CO3: Develop programs using various types of operator and function overloading
- CO4: Demonstrate the use of RTTI, inheritance and runtime polymorphism
- CO5: Experiment the use of files and templates

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 3 | 3 | 3 | | | | | | | | 1 |
| CO2 | | 2 | 3 | 3 | | | | | | | | 1 |
| CO3 | | 3 | 3 | 3 | | | | | | | | 1 |
| CO4 | | 3 | 3 | 3 | | | | | | | | 1 |
| CO5 | | 3 | 3 | 3 | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11MA402 PROBABILITY AND QUEUING THEORY
(Common to CSE and IT branches)

3 1 0 4

MODULE – I

15

Discrete distributions: Moment Generating Function – Properties - Binomial distribution - Poisson distribution - Geometric distribution.

Continuous Distributions: Uniform distribution – Exponential distribution - Gamma distribution - Normal distribution - Functions of a random variable.

MODULE - II

15

Two Dimensional Random Variable: Joint distributions – Marginal and conditional distributions – Covariance – Correlation and regression – Transformation of random variables.

Random Process: Classification of Random Process – Stationary Random Process –Poisson process.

MODULE - III

15

Queuing Theory: Characteristics of a queueing system – Symbolic representation of a queueing model (Kendall’s notation) – Characteristics of birth and death (Poisson) process – Queuing model I (single server Poisson queue model) (M/M/1) : (∞ /FIFO) – Little’s formulae –Queuing model II (multiple server Poisson queue model (M/M/C) : (∞ /FIFO) – Queuing model III (Finite capacity, single server Poisson queue model) (M/M/1): (N/FIFO) – Queuing model IV (Finite capacities, multiple server Poisson model) (M/M/C) : (N/ FIFO).

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOKS

1. Veerarajan., T., “Probability, Statistics and Random Processes”, Second Edition, Tata McGraw-Hill, New Delhi, 2010.
2. Taha, H. A., “Operations Research - An Introduction”, Seventh Edition, Pearson Education Asia, New Delhi, Reprint 2008.

REFERENCE BOOKS

- 1.. Gross, D., “Fundamentals of Queuing theory”, Second Edition, John Wiley and Sons, New York, 2008.
2. Fruend J E and Miller I, “Probability and Statistics for Engineering”, Eighth Edition Prentice Hall of India, New Delhi, 2010.
3. Gupta S C and Kapoor V K, “Fundamentals of Mathematical Statistics”, Sultan Chand & Sons, New Delhi, 2005.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Decide the appropriate distribution to be applied to solve industrial problems
- CO2: Discuss the concepts of two dimensional random variables, correlation, regression and Random process.
- CO3: Identify the Queue disciplines and its applications

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 1 | | | | | | | | 1 |
| CO2 | 3 | 3 | | 1 | | | | | | | | 1 |
| CO3 | 3 | 3 | | 1 | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS401 DATABASE MANAGEMENT SYSTEMS
(Common to Mechatronics, EIE,CSE and IT branches)

3 0 0 3

MODULE – I

15

Data Models and Normalization: Introduction – Database System Applications – Purpose of database systems – View of data – Database Languages – Relational Databases – Database Design – Data Storage and Querying – Transaction Management – Database Architecture – Database Users and Administrators- Relational Model – Structure of Relational Databases – Database Schema – Keys – Schema Diagrams – Relational Query Languages - Relational Operations - SQL introduction – Intermediate SQL – Database Design and E-R model – Relational Database Design.

MODULE - II

15

Indexing and Transaction Processing: RAID – File Organization – Organization of Records in Files – Ordered indices – B⁺ Tree index files – Static and Dynamic Hashing – Bitmap indices – Index in SQL - Query Processing - Overview – Measures of Query Cost - Sorting – Selection, Join and Other Operations - Transactions - Concurrency control- Lock-based Protocols - Deadlock Handling – Multiple Granularity – Timestamp and Validation Based Protocols -Recovery System- Failure classification – Storage – Recovery and atomicity – Algorithm – Buffer management – Failure with loss of nonvolatile storage – Early lock release and Logical undo operations-ARIES

MODULE - III

15

Distributed and Parallel Database: Centralized and Client-Server Architectures – Server System Architectures – Parallel Systems – Distributed Systems -Parallel Databases – I/O Parallelism – Interquery and Intraquery Parallelism – Interoperation and Intraoperation Parallelism- Distributed Databases- Homogeneous and Heterogeneous Databases – Distributed Data Storage and Transactions – Commit Protocols – Concurrency Control – Availability – Query Processing

TOTAL : 45

TEXT BOOKS

1. Silberschatz, Abraham, Korth, Henry F. and Sudarshan S., “Database System Concepts”, Sixth Edition, McGraw-Hill, New York, 2011.

REFERENCE BOOKS

1. Elmasri, Ramez and Navathe, Shamkant B., “Fundamental Database Systems”, Fifth Edition, Pearson Education, New Delhi, 2007
2. Kifer Michael, Philip Lewis, Arthur Bernstein and Prabin Panigrahi “Database Systems: An Application-Oriented Approach, Introductory Version”, Second Edition, Pearson Education, New Delhi, 2007.
3. Date C J, Kannan A and Swamynathan S, “An Introduction to Database Systems”, Eighth Edition, Pearson Education, New Delhi, 2006.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Design a relational database using ER model and normalization
- CO2: Apply SQL to create and manipulate a relational database
- CO3: Demonstrate the use of indexing techniques, query processing and recovery system
- CO4: Explain the concepts of distributed databases, concurrency control and parallel databases

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 3 | | | | | | | | | 2 |
| CO2 | 3 | 3 | 3 | | | | | | | | | 2 |
| CO3 | 3 | 3 | 3 | | | | | | | | | 2 |
| CO4 | 1 | 1 | 2 | | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS402 OPERATING SYSTEMS
(Common to ECE, EIE, CSE and IT branches)

3 0 0 3

MODULE - I

15

Operating System Concepts and CPU Scheduling: Introduction – Computer System Organization –Operating System Structure-Process Management – Memory Management-Storage Management –Protection and Security – Distributed Systems-Operating System Services – System Calls - Process Concept – Process Scheduling – Operations on Processes – Cooperating Processes – Inter-process Communication- Threads – CPU Scheduling: Scheduling criteria – Scheduling algorithms- Process Synchronization: The critical-section problem – Synchronization hardware – Semaphores – critical regions – Monitors.

MODULE - II

15

Deadlock and Memory Management: Deadlock: System model – Deadlock characterization – Methods for handling deadlocks – Deadlock prevention – Deadlock avoidance – Deadlock detection – Recovery from deadlock. Memory Management: Background – Swapping – Contiguous memory allocation – Paging – Segmentation - Virtual Memory: Background – Demand paging – Page replacement –Thrashing.

MODULE - III

15

File System Interface and Mass Storage Structure: File-System Interface: File concept – Access methods – Directory structure – Protection. File-System Implementation: Directory implementation – Allocation methods – Free-space management – I/O Systems – I/O Hardware – Application I/O interface – Kernel I/O subsystem – streams – Mass-Storage Structure: Disk scheduling –Disk management –Case study: Linux- Design Principles – Kernel Modules – Memory management-File Systems.

TOTAL : 45

TEXT BOOKS

1. Silberschatz Avi, Peter Baer Galvin, and Greg Gagne, “Operating System Concepts”, Eighth Edition, John Wiley & Sons, Singapore, 2008.
2. Deital, Harvey M., “Operating Systems”, Third Edition, Pearson Education, New Delhi, 2005.

REFERENCE BOOKS

1. Tanenbaum, Andrew S., “Modern Operating Systems”, Second Edition, Pearson Education, New Delhi, 2004.
2. Gary Nutt., “Operating Systems”, Third Edition, Pearson Education, New Delhi, 2004.
3. Dhamdhare D M, “Operating System: A Concept-Based Approach”, Second Edition, Tata McGraw-Hill, New Delhi, 2006.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize the fundamentals of operating system and process management concepts
- CO2: Categorize memory management techniques and solve problems using page replacement strategies
- CO3: Identify deadlock situations and provide appropriate solutions.
- CO4: Paraphrase file, I/O and mass storage structures
- CO5: Outline the operating system principles with respect to Linux.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 3 | | | | | | | | | 2 |
| CO2 | 3 | 3 | 3 | | | | | | | | | 2 |
| CO3 | 3 | 3 | 3 | | | | | | | | | 2 |
| CO4 | 2 | 3 | 3 | | | | | | | | | 2 |
| CO5 | 1 | 3 | 3 | | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS403 COMPUTER NETWORKS

(Common to EEE and CSE branches)

3 0 0 3

15

MODULE – I

Introduction to Internet and Application Layer: Internet-network edge - network core - access networks & physical media – NAPs, ISPs and Internet backbones- delay & loss in packet-switched networks - protocol layers & their service models – Principles of Network applications, Application layer protocols : world wide web, HTTP , file transfer FTP, email SMTP, Internet directory service DNS.

MODULE - II

15

Transport and Network Layer: Transport layer services and principles - multiplexing and demultiplexing applications - connectionless transport: UDP - principles of reliable data transfer - connection-oriented transport: TCP - principles of congestion control - TCP congestion control. Introduction & network service models –Virtual circuit and datagram networks- inside a router – Internet Protocol (IP) forwarding and addressing-routing algorithms - hierarchical routing –Routing in the internet .

MODULE - III

15

Link Layer, LAN and Wireless Networks: Data Link Layer: Introduction and services - error detection and correction techniques - multiple access protocols – Link layer addresses, ARP, DHCP –LAN: Ethernet - Hubs and switches – Point - to - Point protocol -Wireless Networks: IEEE 802.11 LANs- Architecture – MAC protocol-Frame Format-Mobility-802.15 and bluetooth-Cellular Internet access.

TOTAL : 45

TEXT BOOKS

1. Kurose, K.F and Ross, K.W, "Computer Networking: A Top - Down Approach Featuring The Internet", Fifth Edition, Pearson Education, New Delhi, 2009.

REFERENCE BOOKS

1. Peterson, Larry L. and Davie, Bruce S. "Computer Networks - A System Approach", Second Edition , Morgan kaufmann - Harcourt Asia, New Delhi, 2002.
2. Tenenbaum, Andrew S. "Computer Networks", Fourth Edition, Pearson Education, New Delhi, 2004.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Explain the fundamental principles of computer networking and the functionalities of TCP/IP protocol stack
- CO2: Describe and analyze the performance of various protocols used in computer network
- CO3: Indicate the need for interconnecting devices used in networking
- CO4: Examine the wireless network standards and protocols

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 2 | | | | | | | | | 1 |
| CO2 | 2 | 3 | 3 | | | 1 | 1 | | | | | 1 |
| CO3 | 2 | 3 | 3 | | | 2 | 2 | | | | | 2 |
| CO4 | 1 | 2 | | | | | 1 | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

Amplitude Modulation- Transmission And Reception: Principles of amplitude modulation – AM envelope, frequency spectrum and bandwidth, modulation index and percentage modulation, AM power distribution, AM modulator circuits – low level AM modulator, AM transmitters – low level transmitters, high level transmitters.

AM reception: AM receivers – TRF, Superheterodyne receivers, Double Conversion AM receivers. (Block Diagrams only)

Angle Modulation - Transmission: Angle Modulation – FM and PM waveforms, phase deviation and modulation index, frequency deviation, phase and frequency modulators and demodulators, frequency spectrum of a angle modulated waves, Bandwidth requirement, Narrowband FM and Broadband FM, Average power FM and PM modulators – Direct FM and PM, Direct FM transmitter, Indirect FM transmitter, Angle modulation Vs. amplitude modulation.

MODULE - II

Angle Modulation - Reception: FM receivers: FM demodulators, PLL FM demodulators, FM noise suppression, Frequency Vs. phase Modulation. (Block Diagrams only)

Digital Modulation Techniques : Introduction, Binary PSK, DPSK, QPSK, ASK, Binary FSK, Duobinary encoding – Performance comparison of various systems of Digital Modulation.

Sampling: Sampling theorem, Quadrature sampling of bandpass signals, reconstruction of message from its samples, Signal distortion in sampling.

MODULE - III

Baseband Data Transmission: Discrete PAM signals, power spectra of Discrete PAM signals, ISI Nyquist Criterion for Distortionless baseband binary transmission, eye pattern, adaptive equalization for data transmission.

Spread Spectrum And Multiple Access Techniques: Introduction, Pseudo-noise sequence, DS spread spectrum with coherent binary PSK, Processing gain, FH spread spectrum, multiple access techniques, FDMA, TDMA and CDMA, wireless communication systems, source coding of speech for wireless communications.

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOKS

1. Tomasi, Wayne., “Electronic Communication Systems: Fundamentals Through Advanced”, Pearson Education, New Delhi, 2001.
2. Haykin, Simon., “Digital Communications”, John Wiley & Sons, New York, 2003.

REFERENCE BOOKS

1. Frenzel, Louis E., “Principles of Electronic Communication Systems”, Third Edition, Tata McGraw-Hill, New Delhi, 2008.
2. Haykin, Simon, “Communication Systems”, Fourth Edition, John Wiley & Sons, New York, 2001.
3. Taub and Schilling, “Principles of Communication Systems”, Second Edition, Tata McGraw-Hill, New Delhi, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Understand different types of AM communication systems
- CO2: Know different types of FM transmitters and receivers
- CO3: Gain basic knowledge in different digital modulation techniques
- CO4: Acquire basic knowledge of base band data transmission and adaptive equalization techniques
- CO5: Know the concept of spread spectrum modulation techniques and different multiple access techniques

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | | | 2 | | | | | | | |
| CO2 | 3 | | | | | | | | | | | |
| CO3 | 3 | | | | | | | 1 | | | | |
| CO4 | | | | | 2 | | | | | 1 | | |
| CO5 | 3 | | | | | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

Basic Concepts and Mathematical Analysis: Introduction – notion of algorithm – fundamentals of algorithmic problem solving – important problem types – fundamentals of analysis framework – asymptotic notations and basic efficiency classes – mathematical analysis: non-recursive and recursive algorithms – Fibonacci numbers – Empirical analysis of algorithms – algorithm visualizations.

MODULE - II

Algorithmic Techniques: Brute force: Selection and Bubble sort, Sequential search and String matching – Divide and Conquer: Merge sort, Quick sort, Binary search, Binary tree, traversals and related properties – Decrease and conquer: Insertion sort, Depth First Search and Breadth First Search – Transform and conquer: Presorting, balanced search trees, AVL trees, Heaps and Heap sort.

MODULE - III

Algorithm Design Methods: Dynamic Programming: Warshall’s and Floyd’s algorithms, and Optimal Binary Search Trees – Greedy Techniques: Prim’s and Kruskal’s algorithms, Dijkstra’s algorithm and Huffman trees. Backtracking: N-Queens’ problem, Hamiltonian circuit problem and Sum of sub-sets problem – Branch and Bound: Assignment problem, Knapsack problem and Travelling Salesman Problem – Overview of NP problems.

Lecture: 45, Tutorial: 15, TOTAL: 60

TEXT BOOKS

- Levitin Anany., ‘Introduction to Design and Analysis of Algorithms’, Second Edition, Pearson Education Asia, Singapore 2007.
- Jon Kleinberg and Éva Tardos, ‘Algorithm Design’, Pearson Education Asia, Singapore 2008.

REFERENCE BOOKS

- Cormen T.H., Leiserson C.E., Rivest R.L, and Stein C., ‘Introduction to Algorithms’, Prentice Hall of India, New Delhi, 2001
- Aho A.V, Hopcroft J.E. and Ulman J.D., ‘The Design and Analysis of Computer Algorithms’, Pearson Education Asia, Singapore, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Identify analytical and empirical methods to analyze the performance of algorithms
- CO2: categorize different algorithmic design techniques for searching and sorting and apply for problem solving
- CO3: Differentiate various algorithmic design techniques for optimization in graph and trees and explain computational complexity

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 3 | | | | | | | | | 2 |
| CO2 | 3 | 3 | 3 | | | | | | | | | 2 |
| CO3 | 3 | 3 | 3 | | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS404 DATABASE MANAGEMENT SYSTEMS LABORATORY
(Common to CSE and IT)

0 0 3 1

LIST OF EXPERIMENTS /EXERCISES

1. Implement Data Definition Language (DDL) commands in RDBMS.
2. Implement Data Manipulation Language (DML) and Data Control Language (DCL) commands in RDBMS.
3. Implement all Join operations and Integrity Constraints.
4. Implement High-level language extension with Cursors.
5. Implement High level language extension with Triggers.
6. Implement Procedures and Functions.
7. Implement Embedded SQL.
8. Implement Database design using E-R model and Normalization.
9. Design and implementation of Banking System.
10. Design and implementation of Library Information System.
11. Mini project (Application Development using Oracle/ MYSQL)
 - Inventory Control System.
 - Hospital Management System.
 - Railway Reservation System.
 - Web Based User Identification System.
 - Hotel Management System.
 - Student Information System

REFERENCES / MANUALS/SOFTWARE:

Front End :Microsoft Visual Studio 6.0, Microsoft .NET Framework SDK v2.0
Back End :ORACLE / SQL SERVER

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Implement the PL/SQL commands to create and manipulate databases
- CO2: Design a relational database using ER model and normalization
- CO3: Implement the concepts of embedded query languages
- CO4: Construct programs using database concepts for real world problems

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 3 | 3 | | | | | | | | 1 |
| CO2 | | 3 | 3 | 3 | | | | | | | | 1 |
| CO3 | | 3 | 3 | 3 | | | | | | | | 1 |
| CO4 | | 3 | 2 | 3 | | 2 | 2 | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Program for Drawing Geometrical Objects using Application Wizard
2. Dialog Based Applications
3. Event Handling using Mouse and Keyboard
4. Creating and using Menus
5. Creating Status and Tool Bars
6. Program for SDI Application
7. Program for MDI Application
8. Text Manipulation using GDI
9. Creating Property Sheets and Pages
10. Creating and using ActiveX Controls
11. Creating Custom Draw Controls
12. Creating and using DLLs
13. Working with Databases

REFERENCES / MANUALS/SOFTWARE:

Microsoft Visual Studio 2005

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Create Win32 Application Wizard project.
- CO2: Develop MFC applications using the resources.
- CO3: Generate the SDI and MDI type of applications.
- CO4: Manipulate the database and DLL concepts.
- CO5: Construct components using ActiveX controls

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 2 | 3 | | | | | | | | | |
| CO2 | | 3 | 3 | 2 | | | | | | | | |
| CO3 | | 3 | 3 | | | | | | | | | |
| CO4 | | 3 | 3 | 3 | | | | | | | | |
| CO5 | | 3 | 3 | 3 | | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS406 OPERATING SYSTEMS LABORATORY
(Common to CSE and IT)

0 0 3 1

LIST OF EXPERIMENTS /EXERCISES

1. Shell programming - command syntax - write simple functions - basic tests.
2. Shell programming - 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, Close, etc)
5. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)
6. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)
7. Developing Application using Inter Process communication (using pipes or message queues)
8. Implement the Producer – Consumer problem using semaphores (using UNIX system calls).
9. Implement some memory management schemes – I
10. Implement some memory management schemes – II

REFERENCES / MANUALS/SOFTWARE:

1. Linux Operating System
2. C

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Experiment the use of various linux commands and shell script programming
- CO2: Demonstrate different system calls in process and file management
- CO3: Implement several CPU scheduling algorithms for process scheduling
- CO4: Demonstrate IPC mechanisms and memory management algorithms

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 3 | 3 | 3 | | | | | | | | 1 |
| CO2 | 2 | 3 | 3 | 3 | | | | | | | | 1 |
| CO3 | 2 | 3 | 3 | 3 | | | | | | | | 1 |
| CO4 | 2 | 3 | 3 | 3 | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I

15

Propositional Calculus: Propositions – Logical connectives – Compound propositions – Conditional and bi conditional propositions – Truth tables – Tautologies and contradictions – Contrapositive – Logical equivalences and implications – DeMorgan’s Laws - Normal forms – Principal conjunctive and disjunctive normal forms – Rules of inference – Arguments - Validity of arguments.

Predicate Calculus: Predicates – Statement function – Variables – Free and bound variables – Quantifiers – Universe of discourse – Logical equivalences and implications for quantified statements - Theory of inference – The rules of universal specification and generalization – Validity of arguments.

MODULE - II

15

Set Theory: Cartesian product of sets – Relations on sets –Types of relations and their properties – Relational matrix and the graph of a relation – Equivalence relations – Partial ordering – Poset – Hasse diagram.

Lattices: Definition – Properties – Sublattices – Boolean algebra – Definition – Properties – Simple Problems.

MODULE - III

15

Functions: Definitions of functions – Classification of functions – Composition of functions – Inverse functions – Characteristic function of a set – Recurrence relation and Generating function.

Groups: Groups & Subgroups (Concepts only) - Homomorphism – Cosets and Lagrange’s theorem – Normal subgroups – Codes and group codes – Basic notions of error correction - Error recovery in group codes.

Lecture : 45, Tutorial : 15, TOTAL : 60

TEXT BOOKS

1. Tremblay J.P and Manohar R, “Discrete Mathematical Structures with Applications to Computer Science”, Tata McGraw–Hill, New Delhi, Reprint 2010.
2. Veerarajan T., “Discrete Mathematics with Graph Theory and Combinatorics”, Fourth Edition, Tata McGraw-Hill, New Delhi, 2008.

REFERENCE BOOKS

1. Kolman, Bernard., Busby, Robert C., and Ross, Sharan Cutler, “Discrete Mathematical Structures”, Pearson Education, New Delhi, 2003.
2. Venkatraman M.K., “Discrete Mathematics”, The National Publishing Company, Chennai, 2007.
3. Doerr Alan, and Kenneth Levassaur, “Applied Discrete Structures for Computer Science”, Galgotia Publications Pvt., Ltd., New Delhi, 1998.
4. Judith L.Gersting, “Mathematical Structures for Computer Science”, W.H.Freeman and Company, New York, Fifth Edition, 2006.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Apply the concepts of mathematical logic to software oriented problems.
- CO2: Discuss the concepts of relations, lattices and Boolean algebra.
- CO3: Utilize the concepts of functions and group theory to solve engineering problems.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | 1 | 2 | | | | | | | 1 |
| CO2 | 3 | 3 | | 1 | 2 | | | | | | | 1 |
| CO3 | 3 | 3 | | | 2 | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

15

Core Java: An overview of Java – Data types, Variables, Arrays – Operators – Control Statements – Introducing classes – A closer look at classes and methods – Inheritance – Packages – Interfaces – Exception handling mechanism– Multithreaded programming – Applets: Applet fundamentals and applet class

MODULE - II

15

Java Library: String handling – Exploring java.lang package– Exploring java.util package– Input / Output: Exploring java.io package – Networking – Event handling – Introducing AWT components– Using AWT controls, Layout managers, Menus – Reflection and Remote Method Invocation

MODULE - III

15

Software Development and Design Pattern: Java Database Connectivity – Introduction to Java beans – Introduction to Swing – Servlets - Creational pattern: Factory pattern, singleton – Structural pattern: Adapter pattern, Bridge pattern, Composite pattern- Behavioral pattern: Iterator, Observer pattern

TOTAL:45

TEXT BOOKS

1. Schildt, Herbert., “Java: The Complete Reference”, Seventh Edition, Tata McGraw-Hill, New Delhi, 2007.
2. Cooper, James W., “Java™ Design Patterns”, Addison Wesley, 2006.

REFERENCE BOOKS

1. Buyya Rajkumar., Thamarai Selvi S. and Xingchen Chu., “Object Oriented Programming with Java Essentials and Applications”, Tata McGraw-Hill, 2009.
2. Deitel, Paul and Deitel, Harvey., “Java How to Program”, Eighth Edition, Eastern Economy Edition, 2009.
3. Horstmann, Cay S. and Cornell, Gary., “Core Java: Volume I – Fundamentals”, Eighth Edition, Sun Microsystems Press, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Employ basic Object Oriented Programming concepts to develop simple Java applications
- CO2: Develop applications using different Java packages, AWT and Swing components
- CO3: Create database driven applications using JDBC and simple distributed applications using RMI
- CO4: Discover the different Java design patterns for software development

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 2 | | | | | | | | | 3 |
| CO2 | | 2 | 3 | | | 1 | 2 | | | | | 3 |
| CO3 | | 2 | 3 | | | 1 | 2 | | | | | 3 |
| CO4 | | | 3 | | | 1 | | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

Automata and Regular Expressions: Introduction to formal proof -Finite Automata (FA) – Deterministic Finite Automata (DFA)– Non-deterministic Finite Automata (NFA) – Finite Automata with Epsilon transitions. Regular expression – FA and regular expressions – Proving languages not to be regular – Closure properties of regular languages – Equivalence and minimization of automata.

MODULE - II

Context Free Grammar and Languages: Context-Free Grammar (CFG) – Parse trees – Ambiguity in grammars and languages – Definition of the pushdown automata – Languages of a pushdown automata – Equivalence of pushdown automata and CFG- Deterministic pushdown automata - Normal forms for CFG – Pumping lemma for CFL.

MODULE - III

Turing Machines and Undecidability: Turing machines – Programming techniques for Turing machines. A language that is not Recursively Enumerable (RE) – An undecidable problem that is RE – Undecidable problems about Turing machine – Post’s correspondence problem-The classes P and NP - Kruskal’s algorithm – The traveling salesman problem.

Lecture: 45, Tutorial: 15, TOTAL : 60

TEXT BOOKS

1. Hopcroft, J.E., Motwani, R. and Ullman, J.D, “Introduction to Automata Theory, Languages and Computations”, Third Edition, Pearson Education, New Delhi, 2008.
2. Martin, J., “Introduction to Languages and the Theory of Computation”, Fourth Edition, Tata McGraw-Hill, New Delhi, 2010.

REFERENCE BOOKS

1. Lewis. H.R. and Papadimitriou. C.H., “Elements of the Theory of Computation”, Second Edition, Pearson Education / PHI, New Delhi, 2007.
2. Linz P., “Introduction to Formal Language and Computation,” Fourth Edition, Narosa Publishing, 2007.
3. Nasir and Sirmani., “A Text Book on Automata Theory”, Cambridge University Press, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Apply induction and contradiction methods for theorem proving
- CO2: Identify regular languages and context Free Languages using formal tools.
- CO3: Differentiate problems in terms of complexity/computability using Turing machines.
- CO4: Develop a theoretical model for problem- solving situations in related areas of theoretical computer science.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | | | | | | | | | 2 |
| CO2 | 1 | 3 | 2 | | 2 | | | | | | | 2 |
| CO3 | 1 | 3 | 2 | | | | | | | | | 2 |
| CO4 | 1 | 3 | 2 | | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I

15

Fundamentals: Internetworking concepts and architectural model – Classful internet address – CIDR – subnetting and super netting – Address Resolution Protocol – Reverse Address Resolution Protocol – Internet Protocol –Internet Protocol routing – Internet Control Message Protocol – Internet Protocol version 6 (IPv6)

MODULE – II

15

IP Implementation: IP global software organization – Routing table – Routing algorithms – Fragmentation and reassembly – Error processing (ICMP) – Multicast processing(IGMP)

MODULE – III

15

TCP Implementation: Connection establishment and termination - Data structure and input processing – Finite state machine implementation – Output processing –Timer Management – Flow control and adaptive retransmission – Urgent data processing and push function

TOTAL : 45

TEXT BOOKS

1. Comer, Douglas E., “Internetworking with TCP/IP Principles: Protocols and Architecture, Volume -I”, Fifth Edition, Pearson Education Asia, 2005.
2. Comer, Douglas E., “Internetworking with TCP/IP Principles: Protocols and Architecture, Volume -II”, Fifth Edition, Pearson Education Asia, 2005

REFERENCE BOOKS

1. Forouzan , “TCP/IP Protocol Suite” , Third Edition, Tata McGraw Hill, New Delhi, 2005.
2. Richard Stevens W., “TCP/IP Illustrated”, Volume -II, Pearson Education 2003.
3. Kurose, K.F and Ross, K.W., “Computer Networking: A Top - Down Approach Featuring the Internet”, Fifth Edition, Pearson Education, New Delhi, 2010.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Identify the types of IP addresses, define and design subnetting for a small network
- CO2: Resolve address mapping between IP and MAC addresses
- CO3: Develop routing table and implement routing algorithms with necessary features like fragmentation and error processing
- CO4: Summarize and implement the concepts of TCP protocol

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | 2 | | | 2 | 3 | | | | | 1 |
| CO2 | 2 | | | | | | | | | | | |
| CO3 | 1 | 2 | 3 | | | 2 | 3 | | | | | 1 |
| CO4 | 3 | | 3 | | | 2 | 3 | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11EE504 MICROPROCESSORS AND MICROCONTROLLERS

(Common to EEE, EIE, CSE and Mechatronics branches)

3 0 0 3

MODULE- I

8085 Micro processor: 8085 Architecture – Functional block diagram - Instruction set – Addressing modes – Timing diagrams – Reset and Power on Reset-Assembly language programming – Interrupts- Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface

15

MODULE- II

89C51 Microcontroller: Introduction to RISC and CISC Machines -89C51 Micro controller hardware- Memory Bank- Memory mapping-Register organization-I/O pins – Ports and circuits- Counters and Timers-modes of operation-Serial Data communication I/O- Interrupts-Interfacing to external memory-Instruction sets-Addressing modes

15

MODULE-III

89C51 Programming and Applications :Assembly language programming and Programming with C – Simple programming -I/O port programming -Timer and counter programming – Serial data Communication using max232 converter – Interrupt programming –89C51 Interfacing with Peripherals : LED-Seven segment display – Switch interfacing- LCD, Parallel Analog to Digital Converter- Sensors – Stepper Motors - Speed control of DC motors- Matrix Keyboard and Digital to Analog Converter .

15

TOTAL : 45

TEXT BOOKS

1. Gaonkar R.S, “Microprocessor Architecture, Programming, and Applications with the 8085”, Fifth Edition, Prentice Hall of India, New Delhi, 2002.
2. Mazidi, Mohammed Ali, Mazidi, Janice Gillispie, McKinlay, Rolin.D “The 8051 Microcontroller and Embedded Systems”, Pearson Education Asia, second edition, New Delhi, 2007.

REFERENCE BOOKS

1. Hall Douglas V, “Microprocessors and Interfacing Programming and Hardware”, Tata McGraw Hill, 1995.
2. Ayala Kenneth J, “The 8051 Microcontroller Architecture Programming and Application”, Second Edition, Penram International Publishers (India), New Delhi, 1996.
3. Kleitz. William, “Microprocessor and Microcontroller Fundamental of 8085 and 8051 Hardware and Software”, Pearson Education, New Delhi, 1998.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Explain the basic architecture and interfacing techniques of 8085 and 89C51.
- CO2: Apply the Programming knowledge for real time applications.
- CO3: Design an application specific Microcontroller system.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | 3 | | | | | | | | | 1 |
| CO2 | 3 | | 3 | | | | | | | | | 1 |
| CO3 | 3 | | 3 | | | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I**15**

Introduction and Distributed Objects: Distributed systems- Examples of distributed systems, challenges, models – Architectural models, fundamental models, interprocess communications - Introduction, external data representation and marshalling, client server communication, group communication , case study: IPC in UNIX. Distributed Objects – Introduction, communication between distributed objects, remote procedure call, events and notifications, Java RMI case study.

MODULE - II**15**

File System, Distributed Operating System Support and Synchronization: Distributed File system- Introduction, file service architecture. Name Services- Introduction, name services and DNS, directory and discovery services, case study: Global Name Service. Distributed operating system support - Introduction, the operating system layer, protection, process and threads - communication and invocation, - Operating system architecture. Time and global states - Introduction, clocks, events and process states, synchronizing physical clocks, logical time and logical clocks, global states, distributed mutual exclusion

MODULE - III**15**

Transaction, Concurrency Control, Distributed Transactions, Security and Replication: Transactions, nested transaction. Distributed transactions – Introduction, flat and nested distributed transactions, atomic commit protocols, concurrency control in distributed transactions, distributed deadlocks, transaction recovery. Security-Introduction, overview of security techniques, cryptographic algorithms, digital signatures, cryptography pragmatics. Replication - System model and group communications, fault tolerant services. Case Study- CORBA RMI and CORBA services.

TOTAL : 45**TEXT BOOKS**

1. Coulouris. George, Dollimore, Jean and Kindberg Tim., “Distributed Systems Concepts and Design”, Fourth Edition, Addison-Wesley, 2005.
2. Attiya, Hagit, and Jennifer Welch, “Distributed Computing: Fundamentals, Simulations, and Advanced Topics”, Wiley, 2004.

REFERENCE BOOKS

1. Ajay D. Kshemkalyani and Mukesh Singhal., “Distributed Computing: Principles, Algorithms, and Systems”, Cambridge Press, 2008.
2. Tanenbaum. A.S., and Steen, M.Van., “Distributed Systems”, Pearson Education, New Delhi, 2004.
3. Liu. M .L., “Distributed Computing: Principles and Applications”, Pearson/Addison Wesley, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Demonstrate an understanding of the architectural model of distributed system and the challenges involved in designing the distributed system.
- CO2: Outline the architectural design of a distributed file system, domain name system and distributed operating system.
- CO3: Analyze the issues involved in synchronizing the physical clocks, logical time and logical clocks in distributed environment.
- CO4: Demonstrate an understanding of the distributed transaction, security and replication of distributed application

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 2 | 3 | | | | | | | | | |
| CO2 | | 2 | 3 | | | | | | | | | |
| CO3 | 2 | 2 | 3 | | | | 1 | | | | | |
| CO4 | 1 | 2 | 3 | | | 1 | 1 | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Develop a simple Java package. Use JavaDoc comments for documentation.
2. Design a Java interface and provide necessary exception handling.
3. Develop a simple application to demonstrate dynamic polymorphism.
4. Design a class which provides a method to return the number of active objects created.
5. Develop a simple real-life application program to illustrate the use of multithreads.
6. Design a Date class similar to the one provided in the java.util package.
7. Develop a simple paint-like program that can draw basic graphical primitives in different dimensions and colors. Use appropriate menu and buttons.
8. Develop a scientific calculator using even-driven programming paradigm of Java.
9. Create a text editor that reads lines of text. Also write a program to read and write files using stream classes
10. Develop RMI application to return results of a query from database
11. Create a simple animated component using Java Beans
12. Design a text editor using swing components
13. Design online application using servlet

REFERENCES / MANUALS/SOFTWARE:

Operating System : Windows / Linux

Software : JDK , JSDK

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Develop simple applications to demonstrate the fundamental concepts of Java programming
- CO2: Apply Java AWT and Swing components to develop GUI based applications
- CO3: Create database applications using JDBC
- CO4: Demonstrate the concepts of RMI and Java Beans by developing simple applications

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | | 3 | 2 | | | | | | | | |
| CO2 | | | 3 | 3 | 1 | 1 | | | | | | 3 |
| CO3 | | | 3 | 3 | 1 | 1 | | | | | | 3 |
| CO4 | | | 3 | 2 | 1 | 1 | | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS

MICROPROCESSOR PROGRAMMING:

1. Study of 8085 Microprocessor Kits.
2. Arithmetic operations using 8085
3. Sorting of number series.
4. Code conversion
5. Arithmetic and geometrical series.
6. A/D and D/A conversions.

MICROCONTROLLER PROGRAMMING:

7. Study of 8051/8031 Microcontroller Kits.
8. Arithmetic functions using microcontroller 8051.
9. Logical operations.
10. Stepper motor control.
11. Interfacing of high power devices.
12. Hex code conversion using Keil compiler and burning into the microcontroller

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: Program various applications using 8 bit processor and 8 bit controller.

CO2: Interface various peripherals with 8 bit microcontroller

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | 2 | 2 | | | | | | | | 2 |
| CO2 | 3 | | 2 | 2 | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS

1. Write a program that takes a binary file as input and performs bit stuffing.
2. Write a program that takes a binary file as input and performs CRC Computation.
3. Simulation of ARP
4. Simulation of RARP
5. Develop a Client – Server application for chat.
6. Develop a Client that contacts a given DNS Server to resolve a given hostname.
7. Write a Client to download a file from a HTTP Server.
8. Simulation of Sliding-Window protocol.
9. Simulation of OSPF routing protocol.
10. Simulation of BGP routing protocol.
11. Simulation of nodes with UDP agents using NS2
12. Simulation of nodes with UDP agents using GloMoSim

REFERENCES / MANUALS/SOFTWARE

1. Linux Operating System
2. C Compiler, NS2, GloMoSim

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Demonstrate the functionalities of Data link layer
- CO2: Develop client-server applications using socket programming
- CO3: Design algorithms to evaluate routing functionalities
- CO4: Create simulation environment using NS2 and GlomoSim

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 3 | | | | | | | | |
| CO2 | 1 | 3 | 2 | 3 | | | | | | | | |
| CO3 | 2 | 3 | 2 | 3 | | | | | | | | |
| CO4 | 2 | 3 | 2 | 3 | 3 | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS

English Lab

1. Listening Comprehension
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. Listening for specific information – listening to improve pronunciation – Listening and typing – Filling the blanks – TV programmes and News.
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 – Filling the blanks – Cloze exercises – vocabulary building – Comprehension.
3. Speaking:
Group discussion; verbal and non-verbal communication; speaking on situational topics – maintaining eye contact, speaking audibly, clearly and with confidence – Common errors in English
Conversations – face-to-Face conversation – Telephone Conversation – Roll play.
4. Writing Skills:
Writing job application: 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.

Career Lab

1. Letter Writing / Resume / Report preparation:
Structuring Letter Writing / Resume / Report preparation / E-Mail
 2. Presentation skills
Elements and structure effective presentation – presentation tools – voice
Modulation – Body language – Video samples
 3. Group Discussion
Structure of Group Discussion – Strategies in GD – Team work – Video
Samples
 4. Interview skills
Kinds of Interview- corporate culture – video samples
 5. Soft Skills
Time management – stress management – assertiveness – case study
- Communication Software Package:
1. Young India Software
 - a. Tense Buster Intermediate
 - b. Issues in English
- Globarena – English Lab / Career Lab Software

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Write, read and listen English effectively
 CO2: Communicate effectively in English in real life and career related situations
 CO3: Demonstrate good presentation skill
 CO4: Use the modern communication software package to enhance the soft skills

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | | 2 | | | | | 2 | 3 | | 1 |
| CO2 | | | | 2 | | | | | 2 | 3 | | 1 |
| CO3 | | | | 2 | | | | | 2 | 3 | | 1 |
| CO4 | | | | | | | | | 2 | 3 | | |

3 – Substantial, 2 – Moderate, 1 – Slight

11GE601 ECONOMICS AND MANAGEMENT FOR ENGINEERS

(Common to all Engineering and Technology branches)

3 0 0 3**MODULE – I****15**

Economics – Basics Concepts and Principles – Demand and Supply – Law of demand – Determinants of demand, Law of supply – market Equilibrium – National Income – Circular Flow of Economic activities and Income –National Income and its measurement techniques – Inflation – Causes of Inflation – Controlling Inflation –Business Cycle .

MODULE – II**15**

Forms of business – Management Functions: Planning, Organizing, Staffing, Leading and Controlling- Managerial Skills - Levels of Management - Roles of manager.

Marketing – Core Concepts of Marketing, Four P’s of Marketing, New product development, Product Life Cycle, Pricing Strategies and Decisions. Operations Management – Resources – Site selection, Plant Layout, Steps in Production Planning and Control – EOQ Determination

MODULE – III**15**

Accounting Principles – Financial Statements and its uses – Time value of Money – Depreciation methods — Break Even Analysis – Capital budgeting techniques – Introduction to FDI, FII, Mergers & Acquisition.

TOTAL : 45**TEXT BOOKS**

1. Geetika, Plyali Ghosh, Purba Roy Choudhury, “Managerial Economics”, 1st Edition, Tata McGraw-Hill, New Delhi, 2008.
2. Jeff Madura, “Fundamentals of Business”, Cengage Learning Inc, India, 2007.

REFERENCE BOOKS

1. Stanley L. Brue and Campbell R Mcconnell, “Essentials of Economics”, Tata McGraw-Hill, New Delhi, 2007.
2. S.P.Jain, K.L.Narang, Simi Agrawal, “Accounting for Management”, First Edition, Tata McGraw-Hill, New Delhi, 2009

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Estimate market equilibrium and interpret national income calculation and inflation issues.
- CO2: Categorize the forms of business and analyse the functions of management.
- CO3: Appraise marketing and operations management decisions
- CO4: Interpret financial and accounting statements

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 2 | | | 3 | | 2 | 2 | 2 | 3 | 2 |
| CO2 | | 1 | 2 | | | 2 | 2 | 2 | 2 | 2 | 3 | 2 |
| CO3 | 1 | 2 | 1 | | | 2 | | 2 | 2 | 2 | 3 | 2 |
| CO4 | 2 | 2 | | | | 2 | | 2 | 2 | 2 | 3 | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I**15**

Introduction, Lexical Analysis and Parsing: Compilers – Phases of a compiler – Analysis synthesis phase- Cousins of the compiler – Grouping of phases – Compiler construction tools – Lexical analysis – Role of lexical analyzer - Input buffering – Specification of tokens – Finite automata - Regular expression to NFA and DFA – NFA to DFA conversion - Design of a lexical analyzer generator (Lex). Role of the parser –Writing grammars –Context Free Grammars – Top down parsing – Bottom up parsing –Parser generators (YACC)

MODULE - II**15**

Run Time Environment and Intermediate Code Generation: Runtime storage management - Symbol table - Dynamic storage allocation- Intermediate code generation- intermediate representation – Declarations – Assignment statements – Boolean expressions – Case statements – Back patching – Procedure calls.

MODULE - III**15**

Code Generation and Code Optimization: Issues in the design of code generator – The target machine — Basic blocks and flow graphs – Next use information – A simple code generator – DAG representation of basic blocks – Loops in flow graphs - Peephole optimization - Runtime environments – Source language issues – Storage organization – Storage allocation strategies – Access to non-local names – Parameter passing-Principal sources of optimization – Optimization of basic blocks – Introduction to Global data flow analysis.

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

1. Aho. Alfred, Sethi. Ravi, and Ullman. Jeffrey D, “Compilers: Principles, Techniques and Tools”, Second Edition, Pearson Education (Singapore) Pvt. Ltd., 2008.
2. Holub, Allen I., “Compiler Design in C”, Prentice Hall of India, New Delhi, 2003.

REFERENCE BOOKS

1. Srikant.Y.N and Priti Shankar., “The Compiler Design Handbook: Optimizations and Machine Code Generation”, Second Edition, 2007.
2. Keith Cooper, and Linda Torczon., “Engineering a Compiler”, Morgan Kauffman Publishers, 2004.
3. Alexander Meduna, “Elements of Compiler Design”, Auerbach Publications, 2007.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Express the working principle of different phases of a compiler
- CO2: Create lexical rules and grammars for specifying syntax and semantics of programming language statements
- CO3: Analyze and parse an expression using parsing techniques
- CO4: Generate intermediate code and optimize it
- CO5: Recall the concepts of code generation

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | | | | | | | | | 1 |
| CO2 | 1 | 3 | 2 | | 2 | | | | | | | 2 |
| CO3 | 1 | 3 | 2 | | | | | | | | | 2 |
| CO4 | 1 | 2 | 2 | | | | | | | | | 2 |
| CO5 | | 2 | | | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I**15**

Wireless and Telecommunication Networks: Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular wireless networks. Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000.

MODULE - II**15**

Satellite Networks, Broadcast Systems and Wireless LAN: Satellite networks - Basics – Parameters and configurations – Capacity allocation – FAMA and DAMA - DAB – DVB - Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b - 802.11g – 802.11n standards – HIPERLAN – Blue tooth.

MODULE - III**15**

Mobile Network, Transport and Application Layers: Mobile IP – Dynamic Host Configuration Protocol - Routing – Destination Sequenced Distance Vector (DSDV) – Dynamic Source Routing (DSR) – Alternative metrics - Traditional TCP – Classical TCP improvements – Wireless Application Protocol(WAP) , WAP 2.0.

TOTAL : 45**TEXT BOOKS**

1. Schiller, Jochen., “Mobile Communications”, Second Edition, PHI/Pearson Education, 2009.
2. Stallings, William., “Wireless Communications and Networks”, Second Edition, PHI/Pearson Education, 2009.

REFERENCE BOOKS

1. Pahlavan, Kaveh., “Principles of Wireless Networks: A Unified Approach”, Prentice-Hall of India Pvt Ltd, New Delhi, 2007.
2. Hansmann Uwe., Merk, Lothar., Nicklons, Martin S. and Stober, Thomas., “Principles of Mobile Computing”, Second Edition, Dreamtech Press, 2006.
3. Asoke Talukder, and Roopa Yavagal, “Mobile Computing And Wireless Communications”, First Edition, McGraw-Hill Professional, 2007.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize the fundamental concepts in wireless transmission and articulate the working principles of telecommunication systems
- CO2: Express the concepts and features of satellite, broadcast and Wireless LAN systems
- CO3: Summarize the concepts and issues in the mobile TCP/IP techniques
- CO4: Explain the architecture of WAP and its use to access the web contents through mobiles.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | | | | | | | | | | 3 |
| CO2 | | 2 | 2 | | | | 1 | | | | | |
| CO3 | | 2 | 2 | | | | 1 | | | | | 3 |
| CO4 | | | 2 | | | 1 | 1 | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS603 .NET TECHNOLOGIES
(Common to ECE,CSE and IT branches)

3 0 0 3

MODULE – I

15

.NET overview: .NET overview - The .NET Platform -.NET framework design goal- .NET framework- The common language runtime- CLR environment-CLR executables-Metadata-Assemblies and Manifests-Intermediate Language (IL)-The CTS and CLS-CLR execution. .NET programming -Common programming model -Core features and languages-Language integration,Working with .NET components- Deployment options-Distributed components-COM+ services in .NET-Message queuing.

MODULE – II

15

Introduction to C#: C# Language fundamentals - Classes and Objects - Inheritance and Polymorphism - Operator Overloading – Structs – Interfaces- Arrays, Indexers, and Collections- Strings and Regular Expressions - Handling Exceptions - Delegates and Events - Threads and Synchronization.

MODULE – III

15

Windows and Web Application: Windows Applications: Windows Forms – Namespace – Windows Forms Development. ADO.NET: Architecture – Benefits – Content Components. Web Applications: ASP – ASP.NET – Namespace – Web Form Syntax – Application Development – Data Binding and the Use of Templates – State Management and Scalability – Form Authentication. Case Study: Application Development for Conducting Online Examination.

TOTAL : 45

TEXT BOOKS

1. Thuan L. Thai, “.NET Framework Essentials”, Third Edition, Hoang Lam Publisher: O'Reilly Media, 2003.
2. J. Liberty, “Programming C#”, Second Edition, O’Reilly, 2002.

REFERENCE BOOKS

1. Schildt, Herbert, “The Complete Reference: C#”, Tata McGraw-Hill, 2004.
2. Robinson, et al, “Professional C#”, Second Edition, WroxPress, 2002.
3. Troelsen,Andrew., “C# and the .NET Platform”, A Press, 2003.
4. www.w3schools.com

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Outline the .NET framework architecture and acquire knowledge about fundamentals and advanced features of C#
- CO2: Develop console applications using object oriented concepts and basic programming constructs of C#
- CO3: Use ADO.NET to design event driven Windows and database Applications
- CO4: Create web services and integrate with different applications

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 3 | | | | | | | | | |
| CO2 | 2 | 3 | 3 | | | | | | | | | |
| CO3 | 2 | 3 | 3 | | | | | | 2 | | | 2 |
| CO4 | 2 | 3 | 3 | | | 2 | 2 | | 2 | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11IT702 WEB TECHNOLOGY
(Common to CSE and IT branches)

3 0 0 3

MODULE – I

Introduction to XHTML: Introduction to computers and the Internet – Web Browser basics – Dive into Web 2.0 – Introduction to XHTML – Cascading Style Sheet. **15**

MODULE - II

Client Side Scripting: Introduction to scripting , Control statements I – Control statements II- Functions – Arrays – Objects – Document Object Model(DOM): Objects and collections – Events – Event Bubbling **15**

MODULE - III

Server Side Scripting: Web Servers(IIS and Apache) – Database: SQL, MySQL, ADO.NET 2.0 – PHP – ASP.NET 2.0 and ASP.NET Ajax **15**

XML: Introduction – XML basics –Structuring data – XML Namespaces –Document Type Definitions(DTD) – Schema documents

TOTAL : 45

TEXT BOOKS

- Deitel. H M, Deitel. P J and Goldberg A B, “Internet and World Wide Web: How to Program”, Fourth Edition, Pearson/Prentice Hall of India, New Delhi, 2009.
- Godbole. A.S. and Kahate. A., “Web Technologies”, Second Edition, Tata McGraw-Hill, New Delhi, First Reprint, 2008.

REFERENCE BOOKS

- Deitel. H.M. and Deitel, P.J. and Nieto, T.R., “XML How to Program,” Pearson Education publishers, New Delhi, 2001.
- Potts, Stephen and Mike Kopack., “Teach yourself Web Services in 24 hrs”, Pearson Edition, First Indian Reprint 2004.
- Ladd Eric, and O’ Donnel Jim, “Using HTML 4, XML and Java”, Prentice Hall of India – QUE, New Delhi, 1999.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize the components of Internet and WWW
- CO2: Construct websites using scripting languages and object models
- CO3: Analyze the proper way of integrating client side scripts and databases into web pages.
- CO4: Demonstrate critical thinking in the understanding, evaluation and application of web technology solutions to a variety of real-life situations.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 2 | | | | | | | | | | 1 |
| CO2 | | 3 | 3 | | 2 | 2 | 2 | | | 1 | | 2 |
| CO3 | | 3 | 3 | | 1 | | | | | | | 1 |
| CO4 | | | 3 | | 2 | 1 | 1 | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS/EXERCISES

1. Write a program to construct a scanner program using Lex/ Flex tool
2. Write a program to construct a predictive parser for a small language using (yacc/byson)
3. Write a translation program that accept a regular expression and convert it into NFA or DFA or parse tree
4. Write a translation program that translate the language to an intermediate form (e.g. three-address code),
5. Write a program to generate the target code (in assembly language)
6. Write a program to do the code improvement concept

REFERENCES / MANUALS/SOFTWARE:

C / C++ (Linux /Windows platforms)

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Implement the lexical and syntax analysis phases of a compiler
- CO2: Build symbol tables and generate intermediate code
- CO3: Implement finite automata to check regular expressions
- CO4: Develop programs to generate intermediate and target code.
- CO5: Construct programs to apply optimization concepts

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 3 | 3 | 2 | | | | | | | 2 |
| CO2 | | 3 | 3 | 3 | 2 | | | | | | | 2 |
| CO3 | | 3 | 2 | 3 | | | | | | | | 2 |
| CO4 | | 2 | 3 | 3 | | | | | | | | 2 |
| CO5 | | 3 | 3 | 3 | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Write a C# program to create a stack and implement the various stack operations. Define the required constructor to initialize the data members and also destructor to free the memory
2. Write a C# program to
 - implement the inheritance
 - overload the various operators
3. Write a C# program to define and implement an interface in a class and also to extend and combine interfaces.
4. Write a C# program to
 - demonstrate the purpose of built in exceptions.
 - create a user defined exception.
5. Write a C# program to perform object-oriented string matching and replacement in a given document.
6. Write a C# program to
 - create a delegate.
 - retrieve values from multiple delegates.
7. Design a windows form in C# to register your resume through online mode. Identify the appropriate controls to collect your personal details, education details starting from schools, project details, prizes & ranks and extra-curricular activities.
8. Write a C# program to
 - insert students academic and personal details into a Oracle/SQL Server database
 - retrieve the student details from the database for a given condition and populate the same in a data-grid control.
9. Create a Calculator web service in ASP.NET with arithmetic & trigonometric operations and write an appropriate client code to access the calculator web service.
10. Write a C# program to build a multi module and shared assembly.
11. Write a C# program to invoke a method dynamically which resides in a remote machine and also perform the required marshaling and un marshaling on the arguments passing to a remote method.
5. Write a C# program to implement the producer - consumer problem by using threads and thread synchronization.

REFERENCES / MANUALS/SOFTWARE:

1. Jesse Liberty , Donald Xie “Programming C# 3.0”, 5th Edition, O’Reilly Publications, 2007.
2. Jesse Liberty , Brian MacDonald “Learning C# 3.0”, O’Reilly Publications, ,2008

Software requirements

Operating System : Windows XP
 Application Software : .NET 2.0 and above

COURSE OUTCOMES**On completion of the course the students will be able to**

- CO1: Write Console Applications implementing object oriented programming concepts in C#
- CO2: Create Windows applications using windows controls and events
- CO3: Design database driven applications using ADO.NET
- CO4: Develop web applications and web services using ASP.NET
- CO5: Demonstrate reusability using multi module and shared assembly
- CO6: Create distributed and multi threaded applications

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 2 | 3 | 3 | 3 | | | | | | | |
| CO2 | 1 | 3 | 3 | 3 | 3 | | | | 2 | | | |
| CO3 | 1 | 3 | 3 | 3 | 3 | | | | 2 | | | |
| CO4 | 1 | 3 | 3 | 3 | 3 | | | | 2 | | | 2 |
| CO5 | | | 3 | | | | | | | | | |
| CO6 | 1 | 3 | 2 | 3 | 3 | | | | 2 | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Create a XHTML document for
 - a) display your class timetable using HTML tables
 - b) display the hobbies using ordered list
 - c) display first five semester subjects using unordered list
2. Create a XHTML document to
 - a) Get a library book or return the library book(with fine amount if the book is delayed to return)
 - b) display the tourism spots of Tamil Nadu using frames.
3. Create a XHTML document to do three types of CSS .
4. Write a JavaScript program to
 - a) Manipulate string operation using function
 - b) Search an array
 - c) Throw a die and find its number of occurrences
5. Write a JavaScript program to use Objects and Collections.
6. Write a JavaScript program to work with Events and Event Bubbling
7. Write using PHP to do the following
 - a) Regular Expression
 - b) Database connectivity for Airline Reservation.
8. Write programs using ASP.NET 2.0 and ASP.NET AJAX to do
 - a) e-mail validation.
 - b) password verification
 - c) Query the databases
 - d) Build an Online Quiz
 - e) Web Controls
9. XML and Databases
 - a) Creation of DTD for Book store
 - b) Creation of Schema for Book store

REFERENCES / MANUALS/SOFTWARE:

1. Windows Operating System
2. IIS
3. ASP.NET
4. XML parser

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Design web pages using XHTML and CSS
- CO2: Use JavaScript and AJAX in web pages
- CO3: Create web pages using ASP.NET, PHP and XML Parser

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 1 | 2 | 3 | 3 | | | | | | | 2 |
| CO2 | | 1 | 2 | 3 | 3 | | | | | | | 2 |
| CO3 | | 1 | 2 | 3 | 3 | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11GE701 TOTAL QUALITY MANAGEMENT
(Common to all Engineering and Technology branches)

3 0 0 3

MODULE – I

15

Quality Systems: Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs, Basic concepts of Total Quality Management, Historical Review. Need for ISO 9000 and Other Quality Systems, ISO 9000:2008 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, Introduction to TS 16949, QS 9000, ISO 14000, ISO 18000, ISO 20000, ISO 22000.

MODULE – II

15

TQM Principles: Principles of TQM, Leadership – Concepts, Quality Council, Quality Statements, Strategic Planning, Deming Philosophy, Barriers to TQM Implementation. Customer satisfaction – Customer Perception of Quality, Customer Complaints, Customer Retention, Employee Involvement – Motivation, Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits. Continuous Process Improvement – Juran Trilogy, PDSA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures – Basic Concepts.

MODULE – III

15

TQM Tools: The seven tools of quality, Statistical Fundamentals – Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Process capability, Concept of six sigma, New seven Management tools, Poka Yoke. Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages of FMEA.

TOTAL :45

TEXT BOOKS

1. Besterfield, Dale H. et al., “Total Quality Management”, Third Edition, Pearson Education, 2008
2. Subburaj Ramasamy, “Total Quality Management”, Tata McGraw Hill, New Delhi, 2007.

REFERENCE BOOKS

1. Feigenbaum. A.V, “Total Quality Management”, Tata McGraw Hill, New Delhi, 1999.
2. Suganthi, L and Samuel A Anand., “Total Quality Management”, PHI Learning, New Delhi.
3. Evans James R. and Lindsay William M., “The Management and Control of Quality”, Seventh Edition, South-Western (Thomson Learning), 2007.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: illustrate the evolution and basic concepts of TQM
- CO2: interpret various ISO standards and their implementation procedures
- CO3: apply the principles of TQM and its elements in real time scenario
- CO4: adapt quality tools and techniques to implement TQM at the work place

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | | | | 2 | 2 | 3 | 2 | 2 | 2 | 2 |
| CO2 | | | | | | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| CO3 | | | | | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 |
| CO4 | 3 | 2 | 2 | 2 | 2 | 1 | | 2 | 2 | 2 | 3 | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I**15**

Introduction to Object Oriented Methodologies: An overview of object oriented systems development - Object basics – Object oriented systems development life cycle- Software development process - Building high-quality software - Rumbaugh methodology - Booch methodology - Jacobson methodology - Patterns – Frameworks – Unified Approach - Object oriented analysis - Object oriented design

MODULE – II**15**

UML: Introduction - Unified Modeling Language – Static model - Dynamic model - UML diagrams - UML class diagram - Use case diagram – UML dynamic modeling - UML interaction diagrams - UML state chart diagram - UML activity diagram - Implementation Diagrams - component diagram - Deployment diagram - UML extensibility - Use-case model-Developing effective documentation

MODULE – III**15**

Object Oriented Design: Object oriented design process - Object oriented design axioms-Corollaries – Coupling – Cohesion - Designing classes - UML object constraint language-Designing classes - Class visibility - Refining attributes - Designing methods and protocols-View layer - designing objects - Designing view layer classes - Macro level process - Micro level process - Usability testing - User satisfaction test.

TOTAL: 45**TEXT BOOKS**

1. Ali Bahrami, “Object Oriented Systems Development”, Tata McGraw-Hill, New Delhi, 2008.
2. Russ Miles and Kim Hamilton, “Learning UML 2.0”, O’reilly, 2006.

REFERENCE BOOKS

1. Craig Larman, “Object oriented analysis and design” Prentice hall India, 2005.
2. James Rumbaugh, Ivar Jacobson, Grady Booch “The Unified Modeling Language Reference Manual”, Addison Wesley, 2005. www.ebookpdf.net/the-unified-modeling-language-uml-is-a-graphical-l_1_6196.html
3. John Deacon, “Object-oriented Analysis and Design”, Addison-Wesley, 2005.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Explain the basic concepts of object oriented life cycle
- CO2: Categorize the different object oriented methodologies
- CO3: Identify objects, relationships, services and attributes and construct UML diagrams using appropriate notations
- CO4: Express object oriented design concepts and testing

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 2 | | | | | | | | | 1 |
| CO2 | | 3 | 3 | | | | | | | | | 2 |
| CO3 | | 2 | 3 | | | | | | | | | 2 |
| CO4 | | 2 | 3 | | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I**15**

Output Primitives and two Dimensional Concepts: Introduction - Graphics applications -Graphics systems - Line, Circle and Ellipse drawing algorithms - Attributes – Two dimensional geometric transformations – Two dimensional clipping and viewing – Structures and hierarchical modeling.

MODULE - II**15**

Three Dimensional Concepts and Animation: Three dimensional concepts - Three dimensional object representations – Three dimensional geometric and modeling transformations – Three dimensional viewing - Visible surface detection methods - Color models.

MODULE - III**15**

Multimedia Communications: Introduction - Multimedia applications - Multimedia information representation - Text and image compression - Audio and video compression -Introduction to animation – Two dimensional animation - Basics of three dimensional animation - Web designing.

TOTAL: 45**TEXT BOOKS**

1. Hearn, Donald and Baker, M. Pauline, “Computer Graphics C Version”, Pearson Education, 2008.
2. Halsall, Fred., “Multimedia Communications Applications, Networks, Protocols and Standards”, Pearson Education, 2008.

REFERENCE BOOKS

1. Jeffcoate, Judith., “Multimedia in Practice: Technology and Applications”, Prentice Hall of India, 2007.
2. Foley, James D.; Van Dam, Andries; Feiner, Steven K.; Hughes, John F. “Computer Graphics: Principles & Practice”, Second Edition, Pearson Education, 2005.
3. http://www.ogle.com/Classes/IVC/Max_Level_1.pdf
4. <http://www.3dstudiomaxtutorials.com/>
5. <http://www.creativecrash.com/maya/tutorials/>
6. <http://www.entheosweb.com/Flash/default.asp>

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Outline the fundamental concepts of computer graphics and the components that constitute 2D and 3D graphics
- CO2: Manipulate 2D and 3D objects by applying transformation, clipping, and viewing operations
- CO3: Identify multimedia applications and illustrate different multimedia compression techniques
- CO4: Discuss basics of 2D and 3D animations in web designing

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | | | | | | | | | 1 |
| CO2 | 3 | 3 | 3 | | | | | | | | | 1 |
| CO3 | 3 | 3 | 3 | | | 1 | | | | | | 1 |
| CO4 | 3 | 3 | 1 | | | 1 | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I**15**

Information Security: History, introduction to Information Security, critical characteristics of information, NSTISSC security model, The SDLC, The security SDLC - Need for security, business needs, threats, attacks – Overview of risk management ,and ISO, NIST and VISA models

MODULE - II**15**

Cryptographic Techniques: Number theory concepts - Conventional encryption - Classical and modern techniques – Encryption algorithms – Confidentiality – Simple Data Encryption Standard (SDS) - DES – 3DES – RSA – Elliptic curve cryptography

MODULE - III**15**

Network Security: Hash functions - Digest functions - Digital signatures - Authentication protocols: Kerberos – E-mail security: PGP – IP security and web security – Overview of system security

TOTAL : 45**TEXT BOOKS**

- Whitman. Michael E and Mattord. Herbert J., “Principles of Information Security”, Thomson, 2007.
- Stallings, William., “Cryptography and Network Security: Principles & Practice”, Fifth Edition, Prentice Hall of India, New Delhi, 2010.

REFERENCE BOOKS

- Tipton, Harold F. and Krause, Micki., “Information Security Management Handbook”, Sixth Edition, Taylor and Francis Group, 2009.
- Pfleeger and Pfleeger., “Security in Computing”, Fourth Edition, Pearson Education, 2006.
- Bishop. Matt., “Computer Security Art and Science”, Pearson/PHI, New Delhi, 2002

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize the general principles and practices related to information security
- CO2: Identify the security goals and apply the cryptographic algorithms to meet them
- CO3: Evaluate the features of different authentication mechanisms
- CO4: Summarize the protocols for internet security and measures for system security

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | | | | 1 | | | | | | 1 |
| CO2 | 3 | 3 | | | | 2 | | 1 | | | | 2 |
| CO3 | 3 | 2 | | | | 2 | | | | | | 2 |
| CO4 | 1 | 2 | | | | 2 | | 1 | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS704 SERVICE ORIENTED ARCHITECTURE
(Common to CSE and IT branches)

3 0 0 3

MODULE – I

Fundamentals: Software architecture – Types of IT architecture – SOA – Evolution – Key components – Perspective of SOA – Enterprise - Wide SOA – Architecture – Enterprise applications – Solution architecture for enterprise application – Software platforms for enterprise applications – Patterns for SOA – SOA programming models- Service-oriented analysis and design – Design of activity, data, client and business process services

15

MODULE – II

Technologies: SOA – SOAP – WSDL – JAX – WS – XML WS for .NET – Service integration with ESB – Scenario – Business case for SOA – stakeholder objectives – benefits of SPA – Cost savings - SOA implementation and governance – Strategy – SOA development – SOA governance – Trends in SOA – Event- driven architecture – Software as a service – SOA technologies – Proof-of-concept – Process orchestration – SOA best practices

15

MODULE – III

XML and Security: Meta data management – XML security – XML signature – XML encryption – SAML – XACML – XKMS – WS-Security – Security in web service framework - advanced messaging - Transaction Processing – Paradigm – Protocols and coordination – Transaction specifications – SOA in mobile – Research issues

15

TOTAL : 45

TEXT BOOKS

- Shankar Kambhampaly, “Service –Oriented Architecture for Enterprise Applications”, Wiley India Pvt Ltd, 2008.
- Eric Newcomer, and Greg Lomow., “Understanding SOA with Web Services”, Pearson Education, 2005.

REFERENCE BOOKS

- Eric Pulier, and Hugh Taylor, “Understanding Enterprise SOA”, Wiley India Pvt., 2009.
- Thomas Erl , “Service-Oriented Architecture: Concepts, Technology, and Design”, Prentice Hall India, 2005.
- Mark O’ Neill, et al. , “Web Services Security”, Tata McGraw-Hill, New Delhi, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: appraise the need for service oriented architecture and describe its design principles
- CO2: express the technologies, standards and best practices involved in SOA
- CO3: Illustrate the security measures for SOA with XML

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 1 | 3 | | | | | | | | | 1 |
| CO2 | | 1 | 1 | | 2 | 1 | 1 | | | | | 1 |
| CO3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Student marks analyzing system
To calculate CGPA, attendance percentage, no of failures in each subject, no of subjects failed by individual students, Comparison with previous exam.
2. Quiz system
To create a online quiz in various categories like general knowledge, science and technology, sports, political events, entertainment.
3. Online ticket reservation system
To create a online reservation system which consists of starting point , destination and category of traveling details
4. Payroll system
To create a payroll system which involves in calculating DA, HRA, gross salary, TAX amount to be paid, EPF, VPF
5. Course registration system
To create a new system which involves the course selection in different engineering colleges like counseling with their equivalent mark and its cut off mark to select a course.
6. Expert systems
To create a system to verify the model
7. ATM systems
The systems involves a good user interface display with various options like withdrawal, account transfer, deposit, mini statement, current account, savings account, joint account, PIN number change etc
8. Stock maintenance
To have a inventory system which involves the old stock , new purchase, currently sold, bending items etc
9. Real-Time scheduler
Create a model for real time application
10. Remote procedure call
Create a model for establish communication between various systems

REFERENCES / MANUALS/SOFTWARE:

IBM Rational Suite

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Use Rational Rose modeling tool to construct UML diagrams
- CO2: Construct UML diagrams for an array of application
- CO3: Perform various kinds of testing for the developed applications

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 2 | 2 | 2 | | | | | | | 2 |
| CO2 | | 2 | 3 | 3 | 3 | | | | | | | 2 |
| CO3 | | | 2 | 3 | 1 | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. To implement Bresenham's algorithms for line, circle and ellipse drawing
2. To perform 2D Transformations such as translation, rotation, scaling, reflection and shearing
3. To implement Cohen-Sutherland 2D clipping and window-viewport mapping
4. To perform 3D Transformations such as translation, rotation and scaling
5. To implement text compression algorithm
6. To implement image compression algorithm
7. To perform 2D animation using any Animation software
8. To develop a 3D animation using 3D Maya software
9. To perform basic operations on image using any image editing software
10. To perform audio editing using any audio editing software
11. To perform video editing using any video editing software
12. To develop a web page with animation, audio and video

REFERENCES / MANUALS/SOFTWARE:

C, Adobe Photoshop, Flash MX, 3D Studio Max, 3D Maya.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Illustrate the basics of 2D and 3D graphics and manipulate graphics objects using various techniques such as transformation, clipping, and viewing.
- CO2: Analyze and apply different multimedia compression techniques for suitable multimedia contents
- CO3: Create interactive multimedia projects by integrating various graphics components using appropriate graphics and multimedia tools

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | | 3 | | 1 | | | | | | | |
| CO2 | 1 | | 2 | | 2 | 1 | | | | | | |
| CO3 | | | 3 | | 2 | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

LIST OF EXPERIMENTS /EXERCISES

1. Implementation of Ceaser cipher with Brute force attack, one time pad, poly alphabetic cipher
2. Implémentation of Permutation and Transposition Techniques
3. Implementation of Single round DES
4. Implementation of RSA
5. Implementation of Diffie Hellman key exchange
6. Implementation of Random number generator
7. Implementation of Fermat’s theorem, Euler’s theorem and Euclidian algorithm
8. Implementation of Extended Euclidian algorithm and CRT
9. Implementation of Miller Rabin Primality test and identifying the weakness of the test
10. Implementation of Hashing technique and Birthday attack
11. Implementation of Elliptic curve cryptography
12. Implementation of signature using DSS and RSA approach
- 13.Implementation of a simple firewall
- 14.Study of Kerberos, SSL and PGP

REFERENCES / MANUALS/SOFTWARE:

Linux and C

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Implement network security services and techniques
- CO2: Build applications using key exchange algorithms
- CO3: Develop programs to implement number theory concepts
- CO4: Create programs to illustrate authentication mechanism and firewall
- CO5: Recall the functions of Kerberos, PGP and SSL

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | | 1 | 1 | | | | | 2 |
| CO2 | 3 | 3 | 2 | 3 | | 1 | 1 | | | | | 2 |
| CO3 | 3 | 3 | 2 | 3 | | | | | | | | |
| CO4 | 3 | 3 | 2 | 3 | | 1 | 1 | | | | | 2 |
| CO5 | 3 | 3 | 2 | 3 | | 1 | 1 | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11GE801 PROFESSIONAL ETHICS AND HUMAN VALUES

(Common to all Engineering and Technology branches)

3 0 0 3

MODULE – I

15

Introduction to Human Values and Engineering Ethics: Understanding: Morals- Values-Ethics– Honesty – Integrity – Work Ethic – Service Learning – Civic Virtue –caring – Sharing– Courage – Valuing Time – Co-operation – Commitment – Empathy –Self-Confidence – Character – Spirituality- Senses of 'Engineering Ethics' - variety of moral issues - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest –customs and religion- uses of ethical theories.

MODULE - II

15

Safety, Responsibilities and Rights: Meaning of Engineering experimentation - engineers as responsible experimenters - codes of ethics for engineers - a balanced outlook on law - the challenger case study. Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies. Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights – discrimination- Intellectual Property Rights (IPR)

MODULE - III

15

Global Ethical Issues and Codes : Multinational corporations - Environmental ethics - computer ethics – weapons development-engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership-sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of Electronics and Telecommunication Engineers(IETE),India. etc.

TOTAL: 45

TEXT BOOKS

1. Martin Mike and Schinzinger Roland., “Ethics in Engineering”, Tata McGraw-Hill, New Delhi, 2003.
2. Govindarajan M., Natarajan S and Senthil Kumar V. S., “Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.

REFERENCE BOOKS

1. Fleddermann, Charles D., “Engineering Ethics”, Pearson Education/Prentice Hall, New Jersey, 2004.
2. Harris, Charles E, Protchard Michael S. and Rabins, Michael J., “Engineering Ethics: Concepts and Cases”, Wadsworth Thompson Learning, United States, 2000.
3. Seebauer, Edmund G and Barry, Robert L., “Fundamentals of Ethics for Scientists and Engineers”, Oxford University Press, Oxford, 2001.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Examine the various aspects of human values.
- CO2: Develop as responsible experimenters particularly with reference to safety.
- CO3: Apply appropriate code of ethics to evaluate the probable consequences of actions.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | | | | 3 | | 3 | | 2 | | 3 |
| CO2 | 1 | 2 | 2 | 2 | | 2 | 2 | 3 | 3 | 2 | | 3 |
| CO3 | | | | 1 | | 2 | 1 | 3 | 3 | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS801 SOFTWARE PROJECT MANAGEMENT
(Common to CSE and IT branches)

3 0 0 3

MODULE - I **15**

Introduction and Software Management Process Frame Work: Conventional software management – Evolution of software economics – Improving software economics – Conventional and modern software project management.- Lifecycle phases – Artifacts of the process – Model based software architectures – Workflows of the process – Checkpoints of the process.

MODULE - II **15**

Planning, Scheduling and Risk Management: Process Planning – The Infosys Development Process – Requirement Change Management – Process Planning for the ACIC Project. Effort Estimation and Scheduling: Estimation and Scheduling Concepts – Effort Estimation – Scheduling.
Quality Planning: Quality Concepts – Quantitative Quality Management Planning – Defect Prevention Planning – The Quality Plan of the ACIC Project. Risk Management: Concepts of Risks and Risk Management - Risk Assessment – Risk Control. Measurement and Tracking: Concepts in Measurement – Measurements - Project Tracking.

MODULE - III **15**

Project Management, Configuration Management and Project Execution: Project Management Plan: Team Management – Customer Communication and Issue Resolution – The Structure of the Project Management Plan. Configuration Management: Concepts in Configuration Management – The Configuration Management Process. Project Execution: The Review Process – Data Collection- Monitoring and Control. Project Monitoring and Control: Project Tracking – Milestone Analysis – Activity Level Analysis using SPC – Defect Analysis and Prevention – Process Monitoring and Audit. Agile and SCRUM Methodologies.

TOTAL : 45

TEXT BOOKS:

- Walker Royce, “Software Project Management – A Unified Framework”, Pearson Education, 2011.
- Pankaj Jalote, “ Software Project Management in Practice”, Pearson Education, 2011.

REFERENCES:

- Bob Hughes and Mike Cotterell, “Software Project Management”, Tata McGraw Hill, 2011.
- <http://scrummethodology.com/>
- <http://agilemethodology.org/>

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize the fundamentals of software project management and process framework activities
- CO2: Recall the techniques for process planning, data analysis and management
- CO3: Describe the trends in software project management
- CO4: Apply the software project management aspects to solve real world problems

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 2 | | 1 | | 2 | 1 | | 1 | 3 | 1 |
| CO2 | 1 | 1 | 1 | | 2 | | | 1 | 1 | 3 | 3 | |
| CO3 | 1 | 1 | 2 | | 1 | | | | | | 3 | 1 |
| CO4 | 1 | 1 | 3 | | 2 | | | 1 | 1 | 3 | 3 | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS802 PROJECT WORK

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: To propose a computer based solution in a clear and concise manner

CO2: To identify a problem and summarize an appropriate list of literature review related to the problem.

CO3: To formulate clearly a work plan, procedures and execute the project as a team

CO4: To organise, record and compile the work done throughout the project

CO5: To present the project outlining the approach and results obtained using good oral and written presentation skills

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | J | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 3 | 1 | 2 | 2 |
| CO2 | 2 | 3 | 3 | 1 | | 1 | 2 | | | | 3 | 2 |
| CO3 | 1 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 1 |
| CO4 | 1 | 2 | 3 | 3 | 3 | | | | 2 | 2 | | 1 |
| CO5 | | | | | | | | 2 | 3 | 3 | | |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS011 SOFTWARE QUALITY ASSURANCE
(Common to CSE and IT branches)

3 0 0 3

MODULE - I

Introduction to Software Quality Assurance: Software quality – Software development process models - Clean room methodology - Defect prevention process - Process maturity framework and quality standards – SEI process capability maturity model - SPR assessment - Malcolm Baldrige assessment – ISO 9000 - Product quality metrics - Defect density metric - Customer problems metric - Customer satisfaction metrics - In process quality metrics

MODULE - II

Quality Tools: Ishikawa’s Tool – Check list - Pareto diagram – Histogram - Scatter diagram - Run chart- Control chart - Cause and effect diagram - Rayleigh model- Code integration pattern - PTR sub model - PTR arrival/Backlog projection model - Reliability growth models - Criteria for model evaluation - Complexity metrics and models - Lines of code - Halstad’s Software science - Cyclomatic complexity - Syntactic constructs - Structure metrics

MODULE - III

Quality Assessment: Measuring and analyzing customer satisfaction - Customer satisfaction surveys - Analyzing satisfaction data - Satisfaction with the company - Conducting in-process quality assessments - Preparation phase - Evaluation phase - Summarization phase - Conducting software project assessment s- Audit assessment - Software process maturity assessment and software project assessment - Software project assessment cycle - Proposed software project assessment method

TOTAL: 45

TEXT BOOKS

1. Kan. Stephen H., “Metrics and Models in Software Quality Engineering”, Second Edition, Pearson Education, 2009.
2. Kamna Malik, and Praveen Choudhary., “Software Quality: A Practitioner’s Approach”, Tata McGraw Hill, 2008.

REFERENCE BOOKS

1. Jeff Tian., “Software Quality Engineering: Testing, Quality Assurance, and Quantifiable Improvement”, Wiley-IEEE Computer Society Press, 2005.
2. Godbole, Nina S., “Software Quality Assurance: Principles and Practice”, Narosa, 2007.
3. Raghav Nandyal., “Making sense of Software Quality Assurance”, Tata McGraw Hill, 2007.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize different metrics and standards for assessment of software quality
- CO2: Identify the appropriate tools for assessing the quality of a software
- CO3: Explain processes involved in assessing software quality

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | | | 2 | | | | | | 2 | 2 |
| CO2 | | 3 | | | 2 | | | | | | 2 | 2 |
| CO3 | | 3 | | | 2 | | | | | | 2 | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I**15**

Distributed DBMS: Introduction – Functions and architecture of DDBMS – Distributed relational database design – Transparency in DDBMS – Transaction management – Concurrency control – Deadlock management – Database recovery – The X/Open distributed transaction processing model – Replication servers – Query optimization – Distribution and replication in oracle.

MODULE - II**15**

Object Oriented and Web Databases: Introduction – Weakness of RDBMS – Object oriented concepts - Storing objects in relational databases – Next generation database systems – Object oriented DBMSs - Concepts and design – OODBMS standards and systems – Object relational DBMS – SQL3 - Comparison of ORDBMS and OODBMS - Web technology and DBMSs - Semi structured data and XML – XML related technologies – XML query languages.

MODULE - III**15**

Intelligent Databases and Current Trends: Enhanced data models for advanced applications – Active database concepts and triggers – Temporal database concepts – Deductive databases – Knowledge databases, Mobile database – Geographic information systems – Genome data management – Multimedia database – Parallel database – Spatial databases - Database administration – Data warehousing and data mining.

TOTAL : 45**TEXT BOOKS**

1. Connolly, Thomas M. and Begg, Carolyn E., “Database Systems: A Practical Approach to Design, Implementation, and Management”, Fifth Edition, Pearson Education, 2009.
2. Elmasri, Ramez and Navathe, Shamkant B., “Fundamentals of Database Systems”, Fourth Edition, Pearson Education, 2008.

REFERENCE BOOKS

1. Silberschatz, Abraham., Korth, Henry. F. and Sudharsan S., “Database System Concepts”, Sixth Edition, Tata McGraw Hill, 2009.
2. Ozsu, M.Tamer and Ualduriel, Patrick., “Principles of Distributed Database Systems”, Second Edition, Pearson Education, 2005.
3. Rob, Peter and Coronel, Corlos., “Database Systems: Design, Implementation and Management”, Sixth Edition, Thompson Learning, Course Technology, 2009.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Describe the concepts related to distributed databases and mechanisms to handle issues in them
- CO2: Identify the need for and functionalities of object oriented, object relational and web databases
- CO3: Recall the trends in database technology

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 3 | | 2 | | | | | | | 3 |
| CO2 | | 3 | 3 | | 2 | | | | | | | 3 |
| CO3 | | 3 | 3 | | 2 | | | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS013 ADHOC NETWORKS
(Common to CSE and IT branches)

3 0 0 3

MODULE - I

15

WLAN and MAC Protocol: Characteristics of wireless channel - Fundamentals of WLANs - IEEE 802.11 standard - HIPERLAN standard - Generation of cellular systems – WLL - Wireless ATM - IEEE 802.16 standard - HIPERACCESS - Adhoc Wireless Internet. MAC Protocols design issues - Goals and classification - Contention based protocols with reservation and scheduling mechanisms.

MODULE - II

15

Routing Protocol: Design issues and classification - Table-driven, on-demand - Hybrid routing protocols - Routing protocols with efficient flooding mechanisms - Hierarchical and power-aware routing protocols. Multicast routing protocols design issues and operation - Architecture reference model – Classification - Tree-based and mesh-based protocols - Energy-efficient multicasting.

MODULE - III

15

Transport layer Protocol and Quality of Service: Design issues - Goals and classification - TCP over Ad hoc wireless networks security - Security Requirements - Issues and challenges in security provisioning - Network security attacks - Secure routing. Issues and challenges in providing QoS - Classification of QoS solutions - MAC layer solutions - Network layer solutions – QoS frameworks.

TOTAL: 45

TEXT BOOKS

- Siva Ram Murthy, C. and Manoj, B.S., “AdHoc Wireless Networks: Architectures and Protocols”, Prentice Hall PTR, 2007.
- Misra, Sudip and Woungang, Isaac, “Guide to Wireless AdHoc Networks”, Misra, Subhas Chandra (Eds.), Springer-Verlog, London, 2009.

REFERENCE BOOKS

- Toh C.-K., “AdHoc Mobile Wireless Networks: Protocols and Systems”, Prentice Hall PTR, 2001.
- Mohammad Ilyas, “The Handbook of AdHoc Wireless Networks”, CRC press, 2002.
- Perkins, Charles E., “AdHoc Networking”, Addison – Wesley, 2000.
- Stefano Basagni, Marco Conti, Silvia Giordano and Ivan Stojmenovic, “Mobile AdHoc orking”, Wiley – IEEE press, 2004.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize the concepts of wireless and Adhoc networks
- CO2: Explain the principles of MAC, network and transport layer protocols used in Adhoc networks.
- CO3: Identify the security requirements, QoS parameters and solutions for QoS

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | 2 | | | | | | | | | 2 |
| CO2 | | 3 | 3 | | | | | | | | | |
| CO3 | 2 | 3 | | | | 2 | 2 | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS014 SOFTWARE TESTING
(Common to CSE and IT branches)

3 0 0 3

MODULE – I

15

Software Testing Basics and Assessment: Introduction – Concepts of testing - Functional testing – Non-functional testing - Test Planning - Test Preparation – Test execution – Test reporting and metrics- The three-step process to becoming a world-class testing organization - Building a software testing environment: Creating an environment supportive of software testing -Building the software testing process: Software testing guidelines

MODULE - II

15

Software Testing Process: The seven-step testing process: Overview of the software Testing process - Organizing for testing - Developing the test plan - Verification testing-Validation testing-Analyzing and reporting test results

MODULE - III

15

Testing Responsibilities and using Agile: Software development methodologies - Testing client/server systems-Testing software system security - Testing web-based systems - Building agility into the testing process: Using agile methods to improve software testing.

TOTAL : 45

TEXT BOOKS

1. Perry William., “Effective Methods for Software Testing”, Third Edition, Wiley – India, Reprint 2009.
2. Jenkins, Nick., “A Software Testing Primer”, Online book. www.nickjenkins.net/prose/testing.

REFERENCE BOOKS

1. Rajani. Renu, and Oak. Pradeep, “Software Testing Effective Methods: Tools and Techniques”, Tata McGraw-Hill, New Delhi, 2006.
2. Kit Edward., “Software Testing in the Real World”, Improving the Process, Pearson Education, New Delhi, 2005.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Identify the step by step activities and set up environment for software testing
- CO2: Express the procedure to develop test plan and analyze as well as report the test results.
- CO3: Apply software testing for client server and web based systems
- CO4: Point out the agile methods to improve testing

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 2 | | | 2 | | | | | | |
| CO2 | | 3 | 2 | | | 2 | | | | | | |
| CO3 | | 3 | 2 | | | 2 | | | 3 | | | 3 |
| CO4 | | 3 | 2 | | | 2 | | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I**15**

Introduction to Rational Unified Process: The process-value of software - Development problems - Best practices - Manage requirements - Visually model software – Continuously verify software quality - Control changes to software – The rational unified process -A model of the rational unified process - Roles – Activities – Artifacts - Disciplines – Workflows - Additional process elements – A process framework. -Dynamic structure – Iterative development – The sequential process – Overcoming difficulties – Gaining control

MODULE – II**15**

Architecture: The importance, definition, representation, purpose of architecture - Component based development – Other architectural concepts - A use case driven process - Identifying , evolving , organizing use cases – Uses cases in the process. Project management discipline – Purpose – Planning an iterative project - The concept of risk -The concept of measurement - Roles and artifacts – Workflow - Building an interaction plan -Business modeling discipline – Business modeling – Business modeling scenarios.

MODULE – III**15**

Analysis and Design: Discipline – Analysis versus design – Designing a user centered interface -Design model – Analysis model – Role of interfaces – Artifacts of real time systems – Component based design. The implementation discipline – Builds – Integration – Prototypes – The test discipline – Testing in the iterative lifecycle - Dimensions in testing. The configuration and change management discipline – The CCM cube – The environment discipline purpose – Roles and artifacts. The deployment discipline purpose.

TOTAL: 45**TEXT BOOKS**

1. Kruchten, Philippe., “The Rational Unified Process: An Introduction”, Third Edition, Pearson Education, India, 2008.
2. Shuja, Ahmad K. and Krebs, Jochen., “IBM Rational Unified Process Reference and Certification Guide”, Pearson Education, India, 2008.

REFERENCE BOOKS

1. Kurt Bittner, and Ian Spence,” Managing Iterative Software Development Projects “, Addison-Wesley, 2006
2. Royce, Walker., Bittner, Kurt and Perrow, Michael., “Economics of Iterative Software Development, The Steering Toward Better Business Results”, Addison-Wesley ,2009

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Discuss the role of Rational Unified Process in software development
- CO2: Recognize the role of UML within model driven architecture
- CO3: Express object oriented analysis, design and testing concepts

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 2 | 2 | 2 | | | | | | | 2 |
| CO2 | | 2 | 3 | 3 | 3 | | | | | | | 2 |
| CO3 | | | 2 | 3 | 1 | | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS016 GRID COMPUTING
(Common to CSE and IT branches)

3 0 0 3

MODULE - I

15

Grid Computing, Initiatives and Applications: Introduction – Early grid activities- Current grid activities – An overview of grid business areas– Grid applications - Grid infrastructure- Grid computing organizations and their roles – Grid computing anatomy - Grid computing road map - Merging the grid services architecture with the web Services architecture – Service oriented architecture – Web service architecture – XML, related technologies and their relevance to web services – XML messages and enveloping – Service message description mechanisms – Relationship between web service and grid service – Web service interoperability and the role of the WS-I organization

MODULE - II

15

Grid Computing Technologies: OGSA – Introduction – OGSA architecture and goal - Sample use cases – CDC – NFS – Online media and entertainment – OGSA platform components – OGSI – Introduction – Grid services – A high-level introduction to OGSI – Technical details of OGSI specification – Introduction to service data concepts – Grid service : Naming and change management recommendations – OGSA basic services – CMM – Service domains – Policy architecture – Security architecture – Metering and accounting – Common distributed logging – Distributed data access and replication

MODULE - III

15

Grid Computing Tool kits: Globus GT5 toolkit: Architecture – GT5 software architecture model – Security in GT5 – Data management components – Information services: Monitoring and discovery system– OGSI .Net middleware solutions

TOTAL: 45

TEXT BOOKS

1. Joseph, Joshy and Fellenstein, Craig., “Grid Computing”, Pearson/PHI PTR, New Delhi, 2003.
2. Foster, I and Kesselam, C., “The GRID: Blueprint for a New Computing Infrastructure”, Morgan Kaufmann Publisher, San Francisco, 2004.

REFERENCE BOOKS

1. Abbas Ahmar., “Grid Computing: A Practical Guide to Technology and Applications”, Laxmi Publications (Firewall Media), New Delhi, 2004.
2. Janakiram. D.,” Grid Computing: A Research Monograph”, Tata McGraw-Hill- New Delhi, 2005.
3. <http://www.globus.org/toolkit>

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Outline the need for and evolution of Grids
- CO2: Recognize the protocols used for describing services
- CO3: Identify the applicability, or non-applicability, of Grid technologies for a real time application
- CO4: Describe OGSA and OGSI framework for grid environment
- CO5: Explore components and functionalities of Globus Toolkit 5

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 2 | | | | | | | | | | 1 |
| CO2 | | 2 | 3 | | | 3 | 2 | | | | | 2 |
| CO3 | | 2 | 3 | | | 3 | 2 | | | | | 2 |
| CO4 | | | 3 | | | 3 | 2 | | | | | |
| CO5 | | | 2 | | 3 | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I**15**

Introduction: Intelligent autonomous agents - Agents and objects - Agents and expert systems - Agents as intentional systems - Abstract architectures for intelligent agents - Deductive reasoning agents - Agents as theorem provers - Agent oriented programming - Implementing practical reasoning - The procedural reasoning system - Reactive Agents - Hybrid Agents.

MODULE – II**15**

Communication and Cooperation: Ontology fundamentals- Ontology languages – RDF - Constructing an ontology – Software tools for ontologies – Communicating - Cooperative distributed problem solving- Task sharing and result sharing - Handling inconsistency – Coordination - Multiagent planning and synchronization – Agent oriented analysis and design- Pitfalls of agent development - Mobile agents – Applications - Agents for information retrieval and management, electronic commerce -Human computer interfaces.

MODULE – III**15**

Agent Development and Security: Agents development frameworks and languages development tools applications of agents. Agent oriented methodologies, agent oriented analysis and design, Gaia methodology, MASE, OPEN process framework, tropos, agent UML - Agent security issues - Mobile agents security – Protecting agents against malicious hosts - Un trusted agent -Black box security - Authentication for agents - Security issues for aglets - Agent technology in business.

TOTAL : 45**TEXT BOOKS**

1. Wooldridge, Michael., “An Introduction to Multi-agent Systems”, Second Edition, John Wiley & Sons, 2009.
2. Russel, Stuart and Norvig, Peter., “Artificial Intelligence: a Modern Approach”, Third Edition, Prentice Hall, 2009.

REFERENCE BOOKS

1. Intelligent software agents on the internet-<http://www.hermans.org/agents/index.html>.
2. Leon Sterling and Kuldar Taveter, “The Art of Agent Oriented Modeling”, MIT Press, 2009.
3. Ghai Alkhatib, and David Rine., “Agent Technologies and Web Engineering: Applications and Systems”, Information Science Publishing, 2008.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Describe the architecture and types of reasoning in intelligent agents
- CO2: Express the representation of knowledge and communication in a multi-agent environment
- CO3: Identify the framework for agent design and issues in agent security

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 2 | | | | | | | | | | 2 |
| CO2 | 1 | 2 | | | | | | | | | | 2 |
| CO3 | 1 | 2 | 3 | | 3 | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I**15**

Fundamentals: Software components – Objects – Fundamental properties of component technology – Modules – Interfaces – Callbacks – Directory services – Component architecture – Components and middleware - Threads – Java Beans – Events and connections – Properties – Introspection – JAR files – Reflection – Object serialization.

MODULE - II**15**

Enterprise Java Beans and CORBA: Enterprise Java beans – Distributed object models – RMI and RMI-IIOP- Java and CORBA – Interface definition language – Object request broker – System object model – Portable object adapter – CORBA services – CORBA component model – Containers – Application server – Model driven architecture.

MODULE - III**15**

Component Object Model: COM – Distributed COM – Object reuse – Interfaces and versioning – Dispatch interfaces – Connectable objects – OLE containers and servers – Active X controls – .NET components - Assemblies – Appdomains – Contexts – Reflection – Remoting - Connectors – Contexts – EJB containers – CLR contexts and channels – Black box component framework – Directory objects – Cross-development environment – Component-oriented programming – Component design and implementation tools – Testing tools - Assembly tools.

TOTAL: 45**TEXT BOOKS**

1. Szyperski, Clemens., “Component Software: Beyond Object-Oriented Programming”, Pearson Education, New Delhi, 2003.

REFERENCE BOOKS

1. Roman, Ed, “Mastering Enterprise Java Beans”, John Wiley & Sons Inc., New York, 1999.
2. Hortsamann, Cay S, and Cornell, Gary., “CORE JAVA”, Volume. II, Sun Press, Pearson Education, New Delhi, 2002
3. Mowbray, Thomas J and Ruh, William A., “Inside CORBA”, Pearson Education, New Delhi, 2003.
4. Freeze, Wayne S., “Visual Basic Development Guide for COM & COM+”, BPB Publication, New Delhi, 2001.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Summarize the basic concepts of component based software development
- CO2: Illustrate the methodology for developing distributed application using reusable components across different platforms
- CO3: Identify the concepts of component oriented programming
- CO4: Express the tools for component based software development

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 2 | | 2 | | | | | | | 2 |
| CO2 | | 3 | 2 | | 2 | | | | | | | 2 |
| CO3 | | 3 | 2 | | | | | | | | | 2 |
| CO4 | | 3 | 2 | | 2 | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE – I**15**

Introduction to Kernel and File Systems: UNIX operating system –Unix Commands– Vi editor – Shell programming – Introduction to kernel: Architecture of the UNIX operating system – Kernel data structure - Buffer cache - Buffer headers - Structure of the buffer pool - Scenarios for retrieval of a buffer - Reading and writing disk blocks - Internal representation of files - System calls for the file system

MODULE - II**15**

The Structure of Processes: Process states and transitions - Layout of system memory – Context of a process - Saving the context of a process - Manipulation of the process address space - Sleep - Process control: Process creation - Signals - Process termination – Awaiting process termination - User ID of a process - Changing the size of a process. Process scheduling and time: Process scheduling - System calls for time- Clock.

MODULE - III**15**

Memory Management and Interprocess Communication: Memory management policies - Swapping - Demand paging – Hybrid system with swapping and demand paging - I/O subsystem: Driver interfaces - Disk drivers - Terminal drivers – Stream - Process Tracing - System V IPC - Network communications - Sockets.

TOTAL : 45**TEXT BOOKS**

1. Maruice J. Bach., “The design of the UNIX operating system”, Prentice Hall of India, 2007.
2. Uresh Vahalia., “UNIX Internals: The New Frontiers”, Pearson Education Asia, Second Revised edition, 2010.

REFERENCE BOOKS

1. Rosen, Kenneth H., Host, Douglas A., Klee, Rachel, and Rosinski, Richard R., “UNIX: The Complete Reference”, Second Edition, Tata McGraw Hill, 2007.
2. Robbins, Arnold., “UNIX in a nutshell”, Fourth Edition, O’Reilly Publication, 2005.
3. Afzal, Amir., “UNIX unbounded: A Beginning Approach”, Fifth Edition, Prentice Hall, 2007.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recall the internal structure of the Unix kernel and the working of its system calls in the context of process
- CO2: Identify and make use of system information associated with processes and files
- CO3: Explore Time related activities and memory as well as I/O management policies in UNIX

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | 1 | | | 2 | | | | | | 2 |
| CO2 | 2 | | 1 | | | 2 | | | | | | 2 |
| CO3 | 2 | | 1 | | | 2 | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11EC012 SOFT COMPUTING
(Common to Mechatronics, ECE, CSE and IT branches)

3 0 0 3

MODULE – I

15

Artificial Neural Networks: Basic concepts - Biological neuron, Artificial neuron ,single layer perceptron-Multi layer perceptron-Supervised Learning Neural Networks - Adaline - Backpropagation Mutilayer Perceptrons - Radial Basis Function Networks - Unsupervised Learning Neural Networks - Competitive Learning Networks - Kohonen Self-Organizing Networks - Learning Vector Quantization - Hebbian Learning.

MODULE - II

15

Fuzzy Systems, Neuro-Fuzzy Modelling: Fuzzy sets and Fuzzy reasoning-Fuzzy Matrices-Fuzzy functions-decomposition- Membership Function Formulation and Parameterization - Defuzzification methods Fuzzy Rules and Fuzzy Reasoning: Extension Principle and Fuzzy Relations - Fuzzy If-Then Rules - Fuzzy Reasoning - Fuzzy Inference Systems - Mamdani Fuzzy Models - Sugeno Fuzzy Models - Tsukamoto Fuzzy Models - Input Space Partitioning , Applications. Adaptive Neuro-Fuzzy Inference Systems - Architecture - Hybrid Learning Algorithm - Learning Methods that Cross-fertilize ANFIS and RBFN , Classification and Regression trees-Data clustering algorithm.

MODULE - III

15

Genetic Algorithm and Neuro-Fuzzy Applications: Survival of the fittest-schema theorem -cross over, mutation-, reproduction methods-Application. ANFIS Applications - Introduction- Printed Character Recognition- Nonlinear System Identification- Channel Equalization- Adaptive Noise Cancellation – Soft Computing for color receipt prediction.

TOTAL : 45

TEXT BOOKS

1. Jang J.S.R., Sun C.T and Mizutani E, “Neuro Fuzzy and Soft Computing”, Pearson/Prentice Hall India, New Delhi, 2006.
2. Goldberg David E., “The Design of Innovation; Genetic Algorithm and Evolutionary Computation”, Kluwer Academic publisher, Dordrecht, 2002.

REFERENCE BOOKS

1. Ross Timothy J., “Fuzzy Logic Engineering Applications”, Tata McGraw-Hill, New Delhi, 1997.
2. Rajasekaran S and Vijayalakshmi Pai G A, “Neural Networks: Fuzzy Logic and Genetic Algorithms Synthesis and Applications”, Prentice Hall India, New Delhi, 2007.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Point out artificial neural network algorithms for optimization
- CO2: Outline the fuzzy and neuro-fuzzy models and algorithms
- CO3: Use genetic and neuro-fuzzy techniques for solving real world problems

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 | | | | | | | 3 |
| CO2 | 3 | 3 | 2 | 2 | 2 | | | | | | | 3 |
| CO3 | 3 | 3 | 2 | 2 | 2 | | | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11EI605 EMBEDDED CONTROL
(Common to EIE, EEE, CSE and Mechatronics branches)

3 0 0 3

MODULE- I

15

Introduction to 8 - Bit Microcontrollers: Architecture of PIC 18- Pin Description – Memory organization: Program memory – Data Memory: Register Organization – Oscillator and Reset circuits – Addressing Modes – Instruction set – Simple Programs.

MODULE- II

15

PIC Programming and Applications: Timers – Counters – Capture/ Compare mode – PWM – External Hardware Interrupts – I/O Ports – USART – I²C – ADC – Interfacing to External memory – Assembly language programming: I/O ports – Timers – Counters – PWM – External Hardware Interrupts.

MODULE-III

15

Real-Time Operating System Concepts and Case Studies: Architecture of the Kernel - task and task scheduler - Interrupt Service Routines – Semaphores –Mutex – Mailboxes - Message Queues - Event Registers – Pipes – Signals – Timers - Memory Management – Priority Inversion Problem - Scheduling approaches - Optimality of the Earliest deadline first (EDF) algorithm - challenges in validating timing constraints in priority driven systems - Use of μ C/OS-II - Case study of coding for an Automatic Chocolate Vending Machine using MUCOS RTOS

TOTAL : 45

TEXT BOOKS

1. Mazidi, Muhammad Ali, Mckinlay, Rolin D., and Causey Danny, “PIC Microcontroller and Embedded Systems using Assembly and C for PIC 18”, Pearson Education Asia, 2008.
2. Rajkamal, “Embedded Systems Architecture, Programming and Design”, Tata McGraw Hill, New Delhi, 2003.

REFERENCE BOOKS

1. Peatman, John B., “Design with PIC Microcontrollers”, Pearson Education, New Delhi, 2002.
2. Microchip/PIC Microcontroller Data manuals.
3. Valvano Jonathan W., “Embedded Microcomputer Systems- Real Time Interfacing”, Second Edition, Thomson Asia, Singapore, 2001.
4. Labrosse, Jean J., “Micro C/ OS –II : The real –time curnal”, Second Edition, CMP Books group west publications, 2002.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Gain an insight of Embedded system design
- CO2: Acquire programming skills for simple applications
- CO3: Recognize the concepts of real time operating systems

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | | 1 | | | | | | | | | 2 |
| CO2 | | 2 | 2 | | 2 | | | | | | | 1 |
| CO3 | 1 | | | | | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11IT011 HIGH PERFORMANCE NETWORKS

(Common to CSE and IT branches)

3 0 0 3

MODULE - I

15

High Speed Networks and Congestion Control: Frame Relay Networks – Asynchronous transfer mode – ATM Protocol Architecture, ATM Logical Connections, ATM Cells – ATM Service Categories – AAL – High Speed LAN's: Fast Ethernet, Gigabit Ethernet, Fibre Channel – Wireless LANs – Queuing Analysis- Queuing Models – Single Server Queues– Effects of Congestion -Congestion Control – Traffic Management – Congestion Control in Packet Switching Networks – Frame Relay Congestion Control-SDH/SONET and WDM

MODULE - II

15

TCP and ATM Congestion Control: TCP Flow control – TCP Congestion Control – Retransmission Timer Management – Exponential RTO Backoff – Karn's Algorithm – Window management – Performance of TCP over ATM. Traffic and Congestion control in ATM – Requirements – Attributes – Traffic Management Frame work – Traffic Control – ABR traffic Management – ABR Rate Control, RM Cell Formats, ABR Capacity Allocation – GFR Traffic Management.

MODULE - III

15

Quality of Service in IP Networks: Integrated Services Architecture – Approach, Components, Services-Queuing Discipline- FQ, PS, BRFQ, GPS, WFQ – Random Early Detection, Differentiated Services. Protocols for QoS Support: RSVP – Goals and Characteristics, Data Flows, RSVP Operation, Protocol Mechanisms – Multiprotocol Label Switching – Operation, Label Stacking, Protocol details – RTP – Protocol Architecture, Data Transfer Protocol, RTCP.

TOTAL : 45

TEXT BOOKS

1. Stallings, William., "High Speed Networks and Internets: Performance and QoS", Second Edition, Pearson Education, 2002.
2. Warland, Jean and Varaiya, Pravin., "High Performance Communication Networks", Second Edition, Harcourt Asia Pvt. Ltd., 2000.

REFERENCE BOOKS

1. Irvan Pepelnjk, Jim Guichard and Jeff Aparcar, "MPLS and VPN Architecture", Volume 1 and 2, Cisco Press, 2003.
2. Kasera Sumit and Sethi Pankaj, "ATM Networks", Tata McGraw Hill, New Delhi, 2000.
3. Forouzan, Behrouz.A. "Data Communications and Networking", Fourth Edition, Tata McGraw-Hill, New Delhi, 2006.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Interpret major high-speed networking technologies and their performance issues
- CO2: Analyze the traffic and congestion control mechanisms of TCP and ATM networks
- CO3: Identifying Link level and network level performance evaluation
- CO4: Develop of queuing model into real world networking issues

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | | | | | | | | 2 |
| CO2 | 2 | 3 | 3 | 1 | 1 | | | | | | | 2 |
| CO3 | 3 | 3 | 2 | | | | | | | | | 2 |
| CO4 | 3 | 3 | 3 | 2 | 2 | | | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11IT013 JAVA TECHNOLOGIES
(Common to CSE and IT branches)

3 0 0 3

MODULE – I

15

Basics and Evolution: Overview of Java – J2SE, J2EE and J2ME – type casting – overloading – overriding – abstract classes – interfaces – remote interfaces – interface and implementation – serialization – Remote Method Invocation (RMI) – Remote Object Activation (ROA)

RMI and IIOP: Middleware – Interface Definition Language (IDL) – Object Request Broker (ORB) - RMI-IIOP – reflection – Java Native Interface (JNI) – Java Data Base Connectivity (JDBC)

MODULE – II

15

Streams and Sockets: IO streams – sockets – TCP, UDP and multicast sockets – applets – servlets – cookies – session tracking - applet to applet communication – applet to servlet communication

JSP and Multimedia: Java Bean – Jar files - Java Server Pages (JSP) – JSP objects and directives – multimedia streaming – Java Media Framework (JMF), Java Server Faces(JSF), Google Web Tool kit(GWT)

MODULE – III

15

J2EE: J2EE architecture – EJB – Session, Entity and Message driven beans – Model View Control (MVC) architecture – Java Naming and Directory Interface (JNDI) – eXtensible Markup Language (XML)

J2EE services and J2ME: Java Messaging Service (JMS) - Transactions – Java Transaction Service (JTS) – Java Connector Architecture (JCA) – Java Authentication and Authorization Service (JAAS) - J2ME overview – CLDC and CDC - J2ME architecture and development environment

TOTAL: 45

TEXT BOOKS

- Asbury, Stephen and Weiner, Scott R., “Developing Java Enterprise Applications”, Second Edition, Wiley Publications, 2001.
- Schildt, Herbert, “Java 2: The Complete Reference”, Fifth Edition, Tata McGraw Hill, 2002.

REFERENCE BOOKS

- Rusty Harold, Elliotte., “Java Network Programming”, O’Reilly publishers, 2000.
- Hortsmann and Cornell, “Core Java 2 Advanced Features”, Volume. II, Pearson Education, 2002.
- Keogh James., “J2ME: The Complete Reference”, Tata McGraw Hill edition, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Express the object oriented programming and socket programming concepts.
- CO2: Outline the architectural design of an enterprise web application and its components along with their functionalities.
- CO3: Analyze the proper way of integrating the multimedia contents and database with web pages.
- CO4: Demonstrate critical thinking in the understanding, evaluation and application of web technology solutions to a variety of real-life situations.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 3 | 3 | 1 | 1 | | | | | | | |
| CO2 | | 3 | 3 | 2 | 1 | | 2 | | | | | 3 |
| CO3 | | 3 | 3 | 2 | 1 | 2 | 2 | | | | | 1 |
| CO4 | | 2 | 3 | 2 | 1 | 2 | 2 | | | | | 3 |

3 – Substantial, 2 – Moderate, 1 – Slight

11IT014 CLOUD COMPUTING
(Common to CSE and IT branches)

3 0 0 3

MODULE – I

15

Cloud and Services: Introduction – Evolution of cloud computing – Hardware evolution – Internet software evolution – Server virtualization – Web services overview - IaaS - PaaS – SaaS-XaaS

Cloud Networks: Building cloud networks – Cloud data center – Service oriented architecture - Virtualization – Federation – Presence – Identity Privacy.

MODULE – II

15

Access to Cloud: Hardware and infrastructure – Clients – Security – Network – Services - Accessing the cloud – Platforms – Web applications – Web APIs- Web browsers

Standards and Infrastructure: Cloud storage overview – Cloud service providers – Standards- application – Client – Infrastructure – Service – Software as a service overview –Driving forces – Software and services – Developing applications.

MODULE – III

15

Security and Standards: Security – Challenges – SaaS security – Common standards – Open cloud consortium – Standards for application developers, Messaging and security

Mobile Platform: End user access – Mobile Internet devices – Smartphone – Mobile operating systems – Mobile platform virtualization – Collaboration applications

TOTAL: 45

TEXT BOOKS

- Rittinghouse, John, and Ransome, James., “Cloud Computing: Implementation, Management, and Security”, CRC Press, 2010.
- Toby Velte., Anthony Velte and Elsenpeter, Robert., “Cloud Computing - A Practical Approach”, Tata McGraw Hill, 2010.

REFERENCE BOOKS

- Miller, Michael., “Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online”, QUE publishing, 2009.
- Reese, George., “Cloud Application Architectures: Building Applications and Infrastructure in the cloud”, O Rilly Publications, 2009.
- Miller F.P., Vandome, A.F and McBrewster, John., “Cloud Computing”, Alphascript Publishing, 2009.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Discuss the evolution and services provided by cloud environment
- CO2: Express the infrastructure needed to build and access the cloud
- CO3: Recognize security challenges and standards in cloud environment
- CO4: Identify the requirements for extending cloud services to mobile platforms

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 1 | | | 1 | 3 | 1 | | | | | 1 |
| CO2 | 1 | | | | 1 | 3 | 1 | | | | | 1 |
| CO3 | | 1 | | | | 3 | 1 | | | | | 1 |
| CO4 | | | | | | 3 | 1 | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

MODULE - I**15**

E-Commerce Framework: Introduction – Electronic commerce framework – The anatomy of E-Commerce Applications. - The network infrastructure for E-Commerce- the Internet as a network infrastructure.

E-Commerce systems and applications: Electronic payment systems – Inter organizational Commerce and EDI - EDI Implementation - MIME and Value – Added networks.

MODULE - II**15**

Use of Advertising and Marketing: Advertising and marketing on the Internet – Intra organizational Electronic commerce.

Technologies: Technological components of education on-Demand, Digital copy rights and Electronic commerce - Software agent –Security technologies – Internet protocol suite.

MODULE - III**15**

Business documents and Digital library: The Corporate digital library – Dimensions of internal electronics commerce systems - Making a business case for a document library - Types of digital documents- - Active / Compound document architecture.

Multimedia systems: Multimedia and Digital Video - Broad band telecommunications – Mobile and wireless computing fundamentals.

TOTAL : 45**TEXT BOOKS**

1. Kalakota, Ravi and Whinston, Andrew B., “Frontiers of Electronic Commerce”, Pearson Education, 2004.
2. Loshin, Pete. And Murphy, Paul A., “Electronic Commerce”, Fourth Edition, Charles River Media, 2004.

REFERENCE BOOKS

1. Bajaj, Kamalesh K., “E-Commerce: The Cutting Edge & Business”, Tata McGraw-Hill, 2003.
2. Kennan, Brenda., “Managing your E-Commerce Business”, Prentice Hall of India, 2001.
3. Awad, Elias M., “Electronic Commerce from Vision to Fulfillment”, Prentice Hall of India, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Comprehend the underlying mechanisms and driving forces of E-Commerce
- CO2: Use resources and technologies to define the extent of adoption of Internet as a communication medium for consumed and business
- CO3: Describe the digital document and multimedia communication systems

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 3 | | | 1 | 1 | | | | | |
| CO2 | 1 | 2 | 3 | | | 2 | 2 | | | | | |
| CO3 | 1 | 1 | 3 | | | 2 | 2 | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

11IT017 MULTI-CORE ARCHITECTURE AND PROGRAMMING

(Common to CSE and IT branches)

3 0 0 3

MODULE - I

15

Introduction to Multiprocessors and Scalability issues: Scalable design principles – Principles of processor design – Instruction Level Parallelism, Thread level parallelism. Parallel computer models – Symmetric and distributed shared memory architectures – Performance Issues – Multi-core Architectures - Software and hardware multithreading – SMT and CMP architectures – Design issues – Case studies – Intel Multi-core architecture – SUN CMP architecture

Parallel Programming: Fundamental concepts – Designing for threads. Threading and parallel programming constructs – Synchronization – Critical sections – Deadlock. Threading APIs.

MODULE - II

15

OpenMP Programming: OpenMP – Threading a loop – Thread overheads – Performance issues – Library functions. Solutions to parallel programming problems – Data races, deadlocks and livelocks – Non-blocking algorithms – Memory and cache related issues

MPI Programming: MPI Model – Collective communication – Data decomposition – Communicators and topologies – Point-to-point communication – MPI Library

MODULE - III

15

Multithreaded Application Development: Algorithms – loop parallelism – recursive range specifications – parallel algorithms for streams. Program development and performance tuning

Case Studies: Count strings – quick sort – better matrix multiplication (Strassen) – Advanced Task programming - Memory allocation

TOTAL : 45

TEXT BOOKS

1. Shameem Akhter and Jason Roberts, “Multi-core Programming”, Intel Press, 2006.
2. Quinn, Michael J., “Parallel programming in C with MPI and OpenMP”, Tata McGraw Hill, 2003.

REFERENCE BOOKS

1. Hennessey, John L. and Patterson, David A., “Computer Architecture: A Quantitative Approach”, Fourth. Edition, Morgan Kaufmann / Elsevier Publishers, Amsterdam, 2007.
2. Culler, David E. and Singh, Jaswinder Pal., “Parallel Computing Architecture: A Hardware / Software Approach”, Morgan Kaufmann / Elsevier Publishers, Amsterdam, 1999.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Recognize the need for parallel architecture and issues in parallel programming
- CO2: Apply OpenMP API and MPI programming to implement multicore architecture.
- CO3: Describe the use of parallel algorithms for multithreaded application development

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 1 | | | | | | | | | | |
| CO2 | | 2 | 2 | 1 | 2 | | | | | | | |
| CO3 | | 2 | 1 | | | | | | | | | |

3 – Substantial, 2 – Moderate, 1 – Slight

**11IT019 DATA WAREHOUSING AND DATA MINING
(Common to CSE and IT branches)**

3 0 0 3

MODULE - I

15

Introduction: Introduction to Data Warehouse-Data Warehouse Modelling--Data Warehouse Architecture-Implementation- Data Generalization- Importance of data mining- Data mining functionalities- Data objects and attribute types- Statistical descriptions of data- Major issues in data mining.

Data Preprocessing : Data cleaning- Data integration - transformation- Data reduction- Data discretization and concept hierarchy generation.

MODULE - II

15

Mining Association Rules: Association rule mining – Apriori algorithm – FP growth algorithm– Pattern Evaluation methods.

Classification: Classification by decision tree induction – Bayesian classification – Rule based classification. **Cluster**

Analysis: Types of data in cluster analysis –Clustering Methods – Partitioning methods – Hierarchical methods.

Outlier analysis: Outlier Analysis- Outlier detection methods, Statistical approaches.

MODULE - III

15

Recent Trends and Applications: Mining Complex data types- Statistical data mining- Views on Data mining foundations- Visual and Audio data mining- Data Mining applications- Data Mining and Society.

TOTAL : 45

TEXT BOOKS

- Han Jiawei and Kamber Micheline, “Data Mining: Concepts and Techniques”, Harcourt India India / Morgan Kauffman Pvt Ltd., New Delhi, Third edition,2012.

REFERENCE BOOKS

- Dunham Margaret H., “Data Mining: Introductory and Advanced Topics”, Pearson Education 2006.
- Berson Alex, and Smith Stephen J., “Data Warehousing, Data Mining & OLAP”, MaGraw-Hill publication, 2008.
- David Hand, Heikki Manila, and Padhraic Symth, “Principles of Data Mining”, Prentice Hall of India, New Delhi, 2004.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Describe the data warehousing architecture and design concepts
- CO2: Identify the appropriate preprocessing technique for the given problem
- CO3: Summarize the different data mining techniques and its applications
- CO4: Express the trends in applying the mining techniques for different types of data

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | 2 | 3 | | | | 2 | | | | | 2 |
| CO2 | 2 | 2 | 3 | | | | 2 | | | | | 2 |
| CO3 | 2 | | 3 | | | 2 | 3 | | | | | 2 |
| CO4 | | | 2 | | | | 3 | | | | | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight

11GE011 ENTREPRENEURSHIP DEVELOPMENT
(Common to all Engineering and Technology branches except Civil Engg.)

3 0 0 3

MODULE – I

15

Entrepreneurship Concepts: Meaning and Concepts of Entrepreneurship – Definition and Characteristics of an Entrepreneur – Entrepreneurial Process – The scope of Entrepreneurship in India. Entrepreneurial Motivation – Factors creating Entrepreneurship – Classification of Entrepreneurs – Intrapreneurship - Barriers to Entrepreneurship – Creativity, Innovation & Entrepreneurship - Role of Entrepreneurship in Economic Development.

MODULE – II

15

Business Plan: Business Planning Process – Idea generation, Environmental Scanning, Feasibility Analysis, Drawing Functional Plan - Marketing Plan – Production/Operations Plan –Organizational Plan – Financial Plan – Human Resource Plan – Project Report Preparation , Evaluation, Control and Review.

MODULE – III

15

Managing a Small Business: Sources of Finance - Institutions Supporting Entrepreneurs - EDPs. Small Scale Industry – The Strengths and Weaknesses of Small Business - Growth strategies – Sickness - Evaluation, Symptoms, Causes and Assessment – Rehabilitation of Sick Industries.

TOTAL :45

TEXT BOOKS

1. Madhurima Lall and Shikha Sahai, “ Entrepreneurship”, Excel Books, New Delhi, 2006
2. S.S.Khanka, “ Entrepreneurial Development”, S.Chand & Company Ltd, 2005

REFERENCE BOOKS

1. Robert D Hisrich, Michael P Peters and Dean A Shepherd, “Entrepreneurship”, Sixth Edition, Tata McGraw Hill, New Delhi, 2009.
2. Mary Coulter, “Entrepreneurship in Action”, Second Edition, Prentice Hall of India, New Delhi, 2005.
3. Jain P.C., “Handbook for New Entrepreneurs”, Oxford University Press, Oxford, 2003.

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: demonstrate knowledge of entrepreneurship concepts
- CO2: plan various aspects of business activities
- CO3: manage to start and run small business.

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | | | 1 | | 3 | 3 | 3 | | 3 | | |
| CO2 | 1 | | | 1 | | 3 | 3 | 3 | | 3 | | |
| CO3 | 1 | | | 1 | | 3 | 3 | 3 | | 3 | | |

3 – Substantial, 2 – Moderate, 1 – Slight

11CS020 BUSINESS INTELLIGENCE AND ITS APPLICATION

(Common to CSE and IT branches)

3 0 0 3

MODULE - I

15

Introduction to Data Warehousing and BI : Introduction to Data Warehousing – Data Warehouse Framework – Developing Data Warehouse – Management Framework – Business driven approach – DWRM Technique– OLTP – OLAP – Introduction to BI – BI Framework – BI Process – Applications of BI

Multi-Dimensional Data Modeling : Data warehousing design consideration and Dimensional Modeling – Dimensions, facts cubes, attribute, hierarchies, star and snowflake schema

MODULE - II

15

Changing Dimension : Implementing Changing Dimension – Types of Slowing Changing Dimension – Rapidly Changing Dimensions– Designing Data Warehouse – Common Steps

Data Integration : Extract, Transform and Load process – Interface processing – Post loading processing - Introduction to ETL using SSIS – Integration services – Package structure – Package Items – Control flow - Data flow components – Sources, Transformations and Destinations

MODULE - III

15

Dimensional Modeling and Cube : Dimensional Modeling – Best Practices – Modeling time intervals – Text oriented fact tables – Designing Parent child Dimensions – Designing for null values – Introduction to Dimensional Modeling using SSAS - Creating Cube - Measures – Dimensions – Managing dimensions

Enterprise Reporting : Concepts of Dashboards, Balanced Scorecards – Introduction to Reporting Using SSRS – Reporting Service – Report Structure – Report Delivery – Report Serving Architecture – Report Server – Creating Report using Tablix Data Region with Table Template

TOTAL: 45

TEXT BOOKS

1. Soumendra Mohanty, “Data Warehousing Design, Development and Best Practices”, Tata McGraw-Hill, New Delhi, 2007
2. Brian Larson, “Delivering Business Intelligence with Microsoft SQL Server 2008”, McGraw-Hill, 2009

REFERENCE BOOKS

1. David Loshin, “Business Intelligence”, Morgan Kaufmann Publishers, San Francisco, Fifth edition, 2007
2. Mike Biere, “Business Intelligence for the Enterprise”, Pearson Education, Tenth edition, 2008
3. Larissa Terpeluk Moss, Shaku Atre, “Business Intelligence Roadmap”, Pearson Education, 2007

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: Identify appropriate business intelligence techniques to extract significant business patterns and solve business problems.
- CO2: Express the use of SSIS, SSAS, and SSRS for building accurate and efficient business intelligence applications.
- CO3: Design a data mart and data warehouse for the given problem

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | | 3 | 3 | | | | | | | | 1 |
| CO2 | | | 3 | 3 | 3 | | | | | | | 1 |
| CO3 | | | | | 3 | 2 | | | | | | 1 |

3 – Substantial, 2 – Moderate, 1 – Slight

11IT020 BUILDING ENTERPRISE APPLICATIONS
(Common to CSE and IT branches)

3 0 0 3

MODULE – I

15

Analysis and Modeling: Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications, inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, Non functional requirements, requirements validation, planning and estimation, concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture.

MODULE - II

15

Architectural Design: Technical architecture - design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations. Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design.

MODULE - III

15

Construction and Testing: Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing. Dynamic code analysis – code profiling and code coverage, types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

TOTAL : 45

TEXT BOOKS

1. Anubhav Pradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, Veerakumar Esakimuthu, “Raising Enterprise Applications”, First Edition, Wiley India Pvt. Ltd, 2010.
2. Brett McLaughlin, “Building Java Enterprise Applications”, First Edition, O’Reilly Media publications, 2002.

REFERENCE BOOKS

1. Soren Lauesen , “Software Requirements: Styles & Techniques”, First edition, Addison-Wesley Professional publications, 2002.
2. Brian Berenbach, Daniel J. Paulish, Juergen Kazmeier, Arnold Rudorfer, “Software Systems Requirements Engineering: In Practice”, First Edition, McGraw-Hill/Osborne Media publications, 2009.
3. Dean Leffingwell, Don Widrig , “Managing Software Requirements: A Use Case Approach”, First Edition, Pearson publications, 2003.
4. Varma Vasudeva, “Software Architecture: A Case Based Approach”, First Edition, Pearson publications, 2009.
5. Designing Enterprise Applications with the J2EE Platform (PDF available at- http://java.sun.com/blueprints/guidelines/designing_enterprise_applications_2e/)
6. Srinivasan Desikan, Gopaldaswamy Ramesh, “Software Testing Principles and Practices “, First Edition, Pearson publications, 2006

COURSE OUTCOMES

On completion of the course the students will be able to

- CO1: apply the concepts of Enterprise Analysis and Business Modeling
- CO2: design and document the application Architecture
- CO3: construct and develop different solution Layers
- CO4: perform Code review, Code analysis and Build process
- CO5: recall different testing involved in enterprise application

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

| COs/POs | a | b | c | d | e | f | g | h | i | j | k | l |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 3 | 3 | | | 1 | 1 | 1 | 1 | | 2 | 2 |
| CO2 | | 3 | 3 | | 2 | | | | | | | 2 |
| CO3 | | 3 | 3 | | 2 | | | | 1 | | | 2 |
| CO4 | | | | 3 | 2 | | | | 2 | | 2 | 2 |
| CO5 | | 3 | 3 | 2 | 2 | | | | 2 | | 2 | 2 |

3 – Substantial, 2 – Moderate, 1 – Slight