REGULATIONS - 2015

DEPARTMENT OF
INFORMATION TECHNOLOGY

CURRICULUM & SYLLABUS - FIRST YEAR

B.Tech. – INFORMATION TECHNOLOGY
COLLEGE VISION

- Transforming lives through quality Education and research with human values.

COLLEGE MISSION

- To maintain excellent infrastructure and highly qualified and dedicated faculty.

- To provide a conducive learning environment with an ambience of humanity, wisdom, creativity and team spirit.

- To promote the values of ethical behavior and commitment to the society.

- To partner with academic, industrial and government entities to attain collaborative research.
VISION

To produce technically competent and value based IT Professionals to meet the current challenges of the modern IT industry.

MISSION

The IT department will achieve its vision by

- Imparting quality education with innovative components in teaching learning process.
- Conducting student centric programme to enhance communication, team spirit, leadership skills and self learning.
- Motivating the students to realize the need of ethics and human values.
- Developing a conducive environment for collaborative research.

Program Educational Objectives (PEO)

Programme Educational Objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve:

1. Excel in IT, ITES industries and higher education by applying the principles and practices of computing.
2. Maintain professionalism and adapt to emerging technologies.
Program Outcomes (PO)

At the time of graduation, our IT graduates are expected to have:


2. Identify, formulate, research literature and analyze complex Information Technology problems in Software Engineering, Data Mining, Mobility Engineering, Analytic Computing, Network Management and security, reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. Design solutions for complex Information Management and Security, Networking and web System problems and design systems, components or processes that meet specified needs with appropriate considerations for environment, culture, society, public health and safety.

4. Conduct investigations of complex Information Management and Security, Networking and web System problems using research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5. Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems in Emerging technologies, Networking and web Systems with an understanding of the limitations.

6. Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice in Healthcare and Banking and solutions to complex engineering problems in Networking and Web Systems and Emerging Technologies.

7. Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex Information Technology problems in societal and environmental contexts.

8. Apply ethical principles and commit to professional ethics and responsibilities and norms of Computer Ethics in engineering practice.

9. Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

10. Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Demonstrate knowledge and understanding of engineering management principles and economic decision making and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments

12. Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.
## B.Tech. – INFORMATION TECHNOLOGY

REGULATIONS – 2015
FIRST YEAR CURRICULUM AND SYLLABUS

### SEMESTER – I

<table>
<thead>
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<th>S. No.</th>
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### PRACTICAL COURSES

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**Total 18 4 6 23**

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MAC - Mandatory Course, CFC - Common Foundation Course, SFC - Specific Foundation Course, PCC – Programme Core Course, XEC - X Stands for P or O (PEC – Programme Elective Course, OEC – Open Elective Course)

*Common to all B.E. / B.Tech., Programmes, $Common to CSE and IT
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**FORMAT FOR COURSE CODE**

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- **Compulsory Course**
- **Course Sequence Number**
- **Semester Number**
- **Branch Name**
- **Year of Regulation**
15SH11C  TECHNICAL ENGLISH  L T P C  3 0 0 3

(Course Outcomes) Upon completion of this course, the students will be able to
CO1: acquire the basics of English communication skills. (K3)
CO2: apply the basic language skills to understand various aspects of technical
writing. (K3)
CO3: understand main ideas, specific details and implied meaning while listening and
develop the factual & imaginative information. (S4)
CO4: coordinate and communicate in a wide range of situations. (S4)
CO5: integrate and apply the acquired skills in real life situations. (S4)

UNIT I 9
Parts of Speech - Sentence Structure (SV/SVO/SVC/SVIODO) - Identifying the kinds of sentences
(Statement, Interrogative, Imperative, Exclamatory & Negative) - Informal writing (Diary writing &
letter to friend/ parent/siblings) - Self Introduction - Listening for general information.

UNIT II 9
Transformation of words into different grammatical forms- Converting one kind of sentence into
another sentence (Statement, Interrogative, Imperative, Exclamatory & Negative) - Technical
Vocabulary - Tense Usage (Present tense- Past tense - Future tense - Writing passages in all
tenses) - Letter writing (Permission letter & Requisition letter) - Listening for specific information.

UNIT III 9
Personality Adjective - Concord - Letter Writing: Invitation / Acceptance letters - Itinerary Writing
(with valued points/ situation) - Phonetics (Vowels - Consonants - Diphthongs) - Listening and
filling up the information - Process Description (with valued points).

UNIT IV 9
IF Conditionals - British & American Vocabulary - Letter Writing (Declining / Thanking letters) -
Email writing (with valued points) - Instruction Writing - Listening and giving opinion on the
pictures.

UNIT V 9
Reading comprehension - Error Spotting (Article, Preposition, Modals and Concord) - Presenting
article based on newspaper reading- Situational Conversation - Listening and writing dialogues –
Checklists.

L: 45 TOTAL: 45 PERIODS

Suggested Activity: Each student should read the suggested fiction for oral assignment

TEXT BOOKS
Education Private Limited, New Delhi, 2005.

REFERENCES
2011.
2. Jan Svartvik, Sidney Greenbaum, Geoffery Leech, Randolph Quirk “A Comprehensive

Listening files: Audio files from net sources, Softwares: ODLL, Globerena.
COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: make use of orthogonal transformation. (K3)
CO 2: use the basic concepts of three dimensional geometry in engineering. (K2)
CO 3: obtain maxima and minima of real valued functions. (K3)
CO 4: solve ordinary differential equations. (K3)
CO 5: solve partial differential equations. (K3)

UNIT I MATRICES 15
Characteristic equation – Eigen values and Eigen vectors of a real matrix – Independency and dependency of Eigen vectors – Properties of Eigen values and Eigen vectors (excluding proofs) - Diagonalisation of a matrix by orthogonal transformation- Quadratic forms – Reduction of quadratic form to canonical form by orthogonal transformation and its nature.

UNIT II THREE DIMENSIONAL ANALYTICAL GEOMETRY 15
Direction cosines and Direction ratios- Planes and Lines - Equations of plane and line - Intersection of two planes - Shortest distance between two lines - Equation of a sphere - Plane section of a sphere - Tangent Plane - Orthogonal spheres.

UNIT III FUNCTIONS OF SEVERAL VARIABLES 15
Euler’s theorem on homogeneous functions of two variables - Taylor’s Series - Jacobians - Maxima and Minima - Constrained Maxima and Minima by the method of Lagrange multipliers.

UNIT IV ORDINARY DIFFERENTIAL EQUATIONS 15
Solutions of higher order linear differential equations with constant coefficients - Cauchy’s and Legendre’s linear equations - Solutions of simultaneous first order linear equations with constant coefficients - Method of variation of parameters.

UNIT V PARTIAL DIFFERENTIAL EQUATIONS 15

L: 45 T: 30 TOTAL: 75 PERIODS

TEXT BOOKS

REFERENCES
15SH13C ENGINEERING PHYSICS (Common to all B.E. / B.Tech. Degree Programmes) 3 0 0 3

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: summarize the properties and structures of solids. (K2)
CO 2: define the principles of acoustics and ultrasonics and apply the ultrasonic methods for industrial and medical field. (K1)
CO 3: choose the appropriate Laser technique for industrial and medical applications. (K3)
CO 4: describe the different types, fabrication, losses of optical fibers and their applications in communication and instrumentation. (K1)
CO 5: explain the physical properties of photons & electrons and their applications in different electron microscopes. (K2)

UNIT I PROPERTIES OF MATTER AND CRYSTAL PHYSICS
Hooke's law - Types of moduli of elasticity - Determination of Rigidity modulus and Young's modulus - I shaped Girders.
Miller indices – d spacing - Characteristics of SC, BCC, FCC and HCP structures.

UNIT II ACOUSTICS AND ULTRASONICS
Ultrasonics: Production - magnetostriction generator - piezoelectric generator, Properties - Cavitations - Velocity measurement - acoustic grating, Industrial applications - Medical application - Sonograms.

UNIT III LASER SYSTEM AND APPLICATIONS

UNIT IV FIBER OPTICS AND ITS APPLICATIONS
Numerical aperture and Acceptance angle - Types of optical fibers - Double crucible technique – Splicing - Loss in optical fiber - Fiber optical communication system - Applications - Fiber optic sensors - Endoscope.

UNIT V QUANTUM PHYSICS
Photo electric effect - Matter Waves - Davisson and Germer experiment - Heisenberg’s Uncertainty principle - Schrodinger’s wave equation - particle in one dimensional box - Electron microscope - Scanning electron microscope - Transmission electron microscope.

L: 45 TOTAL: 45 PERIODS

TEXT BOOKS

REFERENCES
15SH14C ENGINEERING CHEMISTRY (Common to all B.E. / B.Tech. Degree Programmes) L T P C 3 0 0 3

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: identify suitable water treatment techniques for industrial and domestic purpose. (K3)
CO 2: explain the type of corrosion and corrosion control methods. (K2)
CO 3: select the polymer for specific application. (K3)
CO 4: explain nano materials preparation. (K2)
CO 5: outline the principle and instrumentation of various analytical techniques. (K2)

UNIT I WATER TREATMENT

UNIT II CORROSION AND ITS CONTROL
Chemical corrosion – electrochemical corrosion – mechanism – different types of electrochemical corrosion – factors influencing corrosion – corrosion control methods.

UNIT III ENGINEERING POLYMERS

UNIT IV NANO MATERIALS
Nanoparticles – synthesis of CNT – precipitation, thermolysis, hydrothermal, solvothermal, electrodeposition, chemical vapour deposition, laser ablation – toxic effect of nano materials– properties and applications.

UNIT V ANALYTICAL TECHNIQUES
Principle, instrumentation and applications of UV-Visible and IR spectroscopy; chromatography: instrumentation and working of gas chromatography and HPLC; conductivity measurements – pH measurements – applications.

L: 45 TOTAL: 45 PERIODS

TEXT BOOKS

REFERENCES
COURSE OUTCOMES
Upon Completion of this course, the students will be able to
CO 1: recognizes the needs of engineering and should be able to acquaint with various
fields of engineering and technology. (A4, K2)
CO 2: practices how to be successful in work and life in general. (K2, S3, A5)
CO 3: feels proud to be an engineering student. (A4)
CO 4: appreciates the initial career profiles of engineers. (A3)
CO 5: prepares for an Engineering Career. (A5)
CO 6: should be able to appreciate creative thinking means to provide engineering solution
(K2, A3)
CO 7: should be able to appraise the values of Outcome Based Education and Choice
Based Credit System. (K2, A2)

UNIT I   HISTORY OF ENGINEERING AND INTRODUCTION TO ENGINEERING      7
PROFESSION
History of Engineering: Definition of Engineering, The Beginnings of Engineering, Overview of
ancient Engineering, Traveling through the Ages, A case study of two historic Engineers –
Lionardo da Vincy, Gutenberg.
Introduction to Engineering Profession: Engineering work is all around you - Engineering as a
profession and common traits of Good Engineers – History of Engineering Disciplines – Functions
of Engineering.

UNIT II   CAREER PATHS OF ENGINEER AND PREPARING FOR AN       8
ENGINEERING CAREER
Career Paths for Engineers: The corporate ladder, The independent entrepreneur, Employment
Opportunities in Government, The military, Engineering and social service abroad, The
Engineering Professor, Graduate work outside of engineering, A mix of two or more of the first six
options.
Preparing for an Engineering Career: Making the Transition from High School to College -
Budgeting Your Time - Daily Studying and Preparation - Getting Involved with an Engineering
Organization - Your Graduation Plan - Other Considerations.

UNIT III   PROFILES OF ENGINEERS                                                       4
Initial Career Profiles of Civil, Mechanical, Electrical, Electronics, Instrumentation, Communication,
Information Technology, Computer Engineering Graduates.

UNIT IV   OVERVIEW OF OBE AND CBCS                                             4
Graduate attributes of Washington Accord – Programme Specific Criteria (PSC) – Programme
Educational Objectives (PEOs) – Programme Outcomes (POs) – Course Outcomes (COs) –
CBCS : Course categories - Scheme of instruction, Assessment and Evaluation.

UNIT V   LEARNING AND CREATIVE THOUGHT                                       7
Introduction: The successful engineering student - the engineering curriculum - curriculum
planning and management - adapting to the college classroom.
The learning process: the nature of learning - information processing and memory - determinants
of efficient learning - practical suggestions for learning.
Differences in the way people think: The four-quadrant model of thinking - hindrances to
problem solving.
On Creativity: What is creativity? - the nature of creativity - characteristics of creative people - the creative process - overcoming obstacles to creative thinking.

L: 30 TOTAL: 30 PERIODS

REFERENCES


WEB RESOURCES

www.ieagreements.org/IEA-Grad-Attr-Prof-Competencies.pdf
15SH16C ENGINEERING GRAPHICS L T P C 2 0 2 3

(Course Common to all B.E./B.Tech. Degree Programmes)

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: use the drawing instruments effectively. (K2, S4, A3)
CO 2: draw the projections of points, straight lines, planes. (K2, S3, A3)
CO 3: construct the projections of various solids in different positions. (K3, S3, A3)
CO 4: draw the sectional views of various solids and construct the true shape of the
section. (K3, S3, A3)
CO 5: identify and draw the surface areas of simple solids. (K3, S3, A3)
CO 6: draw perspective views of simple solids and draw the orthographic views of simple
objects. (K3, S3, A3)

UNIT I PROJECTION OF POINTS, LINES AND PLANE SURFACES 12
Drawing Instruments- IS specifications on lines- drawing sheets- Printing letters and
dimensioning- scales - First angle projection. (Not for examination).
Projections of points and straight lines located in the first quadrant-Determination of true
lengths and true inclinations. Projections of regular polygonal surfaces and circular lamina
inclined to both reference planes

UNIT II PROJECTION OF SOLIDS 12
Projections of simple solids - axis inclined to one reference plane - change of position method.

UNIT III SECTION OF SOLIDS 12
Sectioning of simple solids - cutting planes inclined to one reference plane and perpendicular to
the other.

UNIT IV DEVELOPMENT OF SURFACES AND ISOMETRIC PROJECTIONS 12
Development of lateral surfaces of simple and truncated solids - Principles of isometric
projection and view of simple solids - truncated prism and pyramids.

UNIT V PERSPECTIVE PROJECTIONS AND ORTHOGRAPHIC PROJECTIONS 12
Perspective projection of cube, prisms and pyramids by visual ray method and vanishing point
method. Orthographic projection – simple objects with straight and curved surfaces.

L: 30 P: 30 TOTAL: 60 PERIODS

TEXT BOOKS

REFERENCES
PART A – ENGINEERING PHYSICS LABORATORY

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO1: demonstrate the properties of light waves. (K2, S3)
CO2: interpret the production of ultrasounds and how the velocity of ultrasounds varies with respect to medium. (K2, S3)
CO3: illustrate the mechanical and electrical properties of materials. (K2, S3)

LIST OF EXPERIMENTS
1. Determination of thickness of a thin wire – Air wedge method.
2. Determination of velocity of sound and compressibility of the liquid – Ultrasonic Interferometer.
3. Determination of Dispersive power of a prism using Spectrometer.
5. Torsional pendulum – Determination of Moment of Inertia of the disc and Rigidity modulus of the material of the wire.
6. Determination of specific resistance of a given coil of wire – Carey Foster’s Bridge.
10. Determination of temperature coefficient of resistance.

P:15 TOTAL: 15 PERIODS

PART B - ENGINEERING CHEMISTRY LABORATORY

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: estimate the amount of hardness of the water sample (K5, S3)
CO 2: determine the rate of corrosion (K5, S3)
CO 3: synthesize a polymer and to determine molecular weight of the polymer (K6, S3)
CO 4: synthesize silver nano particles (K6,S6)
CO 5: quantify different ions by different analytical techniques (K5,S3)

LIST OF EXPERIMENTS
1. Estimation of hardness of water sample by EDTA method
2. Rate of corrosion- weight loss method
3. Synthesis of urea-formaldehyde resin
4. Determination of molecular weight of a polymer – Oswald’s viscometer
5. Synthesis and characterization of silver nano particles.
6. Estimation of iron (Fe$^{2+}$) in water sample by dichrometry
7. Estimation of hydrochloric acid by conductometric method
8. Estimation of mixture of acids by conductometric method

P: 15 TOTAL: 15 PERIODS

• A minimum of FIVE experiments shall be offered.
• Laboratory classes on alternate weeks for Physics and Chemistry.
REFERENCES
PART A - MECHANICAL LABORATORY

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: prepare basic carpentry jobs (at least three joints). (K3,S2,A2)
CO 2: prepare the welded joint (minimum three) using arc and gas welding. (K3,S2,A2)
CO 3: Machine metals using lathe, shaper and drilling machine (each one job). (K3,S2,A2)

UNIT I  CARPENTRY PRACTICES  5
Study of carpentry tools – preparation of joints like half lap, Tee and dove tail in wood.

UNIT II  WELDING  5
Study of welding tools – Preparation of welded joints with Mild steel specimen like lap, butt and tee joints using ARC and Gas welding. (any one exercise should be given using Gas welding among three)

UNIT III  BASIC MACHINING PRACTICES  5
Simple turning and taper turning using lathe – use of shaper and drilling machine for basic operations (Minimum three exercises should be given for students)

P: 15  TOTAL: 15 PERIODS

TEXT BOOK

REFERENCES
PART – B ELECTRICAL AND ELECTRONICS LABORATORY

COURSE OUTCOMES
Upon completion of this course, the students will be able to,
CO 1: develop simple residential wiring circuits. (K6)
CO 2: calculate the basic electrical quantities. (K4)
CO 3: identify the value of resistance using appropriate methods. (K4, A4)
CO 4: realize the fundamentals of Boolean algebra using digital logic gates. (A4)
CO 5: practice soldering to design PCB for electronic circuits. (A5)

I. ELECTRICAL ENGINEERING PRACTICE
1. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2. Fluorescent lamp wiring.
5. Measurement of energy using single phase energy meter.

II. ELECTRONICS ENGINEERING PRACTICE
1. Study of Electronic components and equipments – Resistor, colour coding, measurement of AC signal parameters (peak-peak, rms period, frequency) using CRO
2. Study of logic gates AND, OR, XOR and NOT.
4. Soldering practice – Components, Devices and Circuits – Using general purpose PCB.
5. Measurement of ripple factor of HWR and FWR.

P: 15 TOTAL: 15 PERIODS

REFERENCES
PROFESSIONAL ENGLISH (Common to all B.E. / B.Tech. Degree Programmes)

COURSE OUTCOMES

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

CO 1: contribute the lingual power to frame sentences in different context. (A2)
CO 2: write effectively in any Professional context. (A2)
CO 3: acquire the skills related to Group discussion. (A2)
CO 4: communicate and respond in different social and professional contexts. (A3)
CO 5: recall the acquired skills in solving competitive exam. (K3)

UNIT I
Phrasal Verbs (Based on root words: call, come, get, look, put, run, and take) - Foreign Words and Phrases (from the given list) - Listening to audio files and finding the technical words and framing different sentences - Channel conversion- Descriptive writing on various charts.

UNIT II
Idioms and Phrases (with animal names from the given list) - Report writing (types-structure-stages in report writing- model report) - Job Application Letter with curriculum vitae.

UNIT III
One word substitution (from the list given) Group Discussion (Why is GD a part of selection process? - Structure of GD – Strategies in GD – Team Work - Body Language - Video Samples-GD).

UNIT IV
Choosing a suitable connotation (from the given list) - Note making – Preparing Circular and Minutes of meeting – Listening to TED Talks – Giving opinion on the given TED Talks and interviewing the TED talkers.

UNIT V
Error Spotting (Tense, Relative Pronouns, Conjunctions, Sentence Structure, Adverb Placement) Sentence Completion - Reading comprehension.

L: 45 TOTAL: 45 PERIODS

Activity: Each student should read the suggested fiction for oral assignment.

TEXT BOOK

REFERENCES

Listening files: Audio files from net sources and softwares: ODLL, Globerena.
COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: grasp the basic concepts of probability and random variables. (K2)
CO 2: find the correlation and regression of two dimensional random variables. (K2)
CO 3: characterize the phenomena which evolve with respect to time in a probabilistic manner. (K2)
CO 4: calculate the various measures of dispersion. (K3)
CO 5: apply the concepts of estimation and hypothesis testing. (K3)

UNIT I PROBABILITY AND RANDOM VARIABLES 15

UNIT II TWO DIMENSIONAL RANDOM VARIABLES 15
Joint distributions - Marginal and conditional distributions – Covariance - Correlation and regression-Central Limit Theorem.

UNIT III RANDOM PROCESSES 15

UNIT IV STATISTICS 15
Mean – Median- Mode - Moments- Skewness- Kurtosis – Correlation - Single and bivariate frequency distributions - Regression lines.

UNIT V SAMPLING THEORY 15
Large samples - Tests on means and proportions for large samples - Test for single variance and equality of variances - Small samples- t- test- F- test - Chi square test.

L: 45 T: 30 TOTAL: 75 PERIODS

TEXT BOOKS

REFERENCES
15IT23C    PHYSICS OF SOLID STATE DEVICES    L T P C
(Common to CSE and IT)    3 0 0 3

COURSE OUTCOMES
Upon completion of this course, the students will be able to

CO 1: infer the electrical properties of conducting and superconducting materials. (K2)
CO 2: explain the basics of semiconductors. (K2)
CO 3: describe the operation and characteristics of semiconductor diodes. (K1)
CO 4: express the properties and applications of the optical materials. (K2)
CO 5: classify the magnetic materials and demonstrate their applications in storage devices. (K2)

UNIT I    CONDUCTING MATERIALS AND SUPERCONDUCTORS    9
Superconductors: BCS Theory, Properties - Meissner effect – Isotopic effect, Types of superconductors – Type I and Type II superconductors; Applications of superconductors – Cryotron, SQUID, Magnetic levitation.

UNIT II    SEMICONDUCTORS    9
Intrinsic semiconductor – carrier concentration – determination of bandgap energy - Extrinsic semiconductors – carrier concentration - Hall effect.

UNIT III    SEMICONDUCTOR DIODES    9

UNIT IV    OPTICAL MATERIALS    9
Optical properties of metals, insulators and semiconductors - Liquid crystal display – LED – Thermography - Solar cell.

UNIT V    MAGNETIC MATERIALS AND STORAGE DEVICES    9

L: 45 TOTAL: 45 PERIODS

TEXT BOOKS

REFERENCES
COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: define the basics of Boolean algebra and illustrate the Boolean functions by logic gates. (K1,S2,A1)
CO 2: explain and design different types of combinational circuits. (K2,S3)
CO 3: illustrate the basics of synchronous sequential logic and Registers. (K1,S2)
CO 4: analyze and design asynchronous sequential logic circuits. (K4,S2,A2)
CO 5: classify and explain different types of memories. (K1,S1,A1)

UNIT I  BOOLEAN ALGEBRA AND LOGIC GATES  15
Review of binary number systems - Binary arithmetic - Binary codes - Boolean algebra and theorems - Boolean functions - Simplifications of Boolean functions using Karnaugh map and tabulation methods - Logic gates.

UNIT II  COMBINATIONAL LOGIC  15

UNIT III  SYNCHRONOUS SEQUENTIAL LOGIC  15

UNIT IV  ASYNCHRONOUS SEQUENTIAL LOGIC  15

UNIT V  MEMORY AND PROGRAMMABLE LOGIC  15

TEXT BOOKS

REFERENCES
15IT25C                  C PROGRAMMING FOR ENGINEERS                           L  T  P  C
(Common to all B.E. / B.Tech. Degree Programmes)   3 0 0 3

COURSE OUTCOMES
Upon completion of this course, the students will be able to
- CO 1: recognize the system fundamentals and the role of hardware components of the Computer. (K3)
- CO 2: apply the basic concepts and solve simple problems by analyzing the logics of conditional statements and looping constructs. (K3)
- CO 3: handle similar types of data using array and utilize their functionality. (K3)
- CO 4: appreciate the call by value and call by reference features in functions. (K5)
- CO 5: design programs involving their own derived data types, pointers, memory allocation concepts. (K4)
- CO 6: handle the file contents with access permissions. (K3)

UNIT I          COMPUTER FUNDAMENTALS                                                  10

UNIT II         BASIC C PROGRAMMING                                                  9
Overview of C Program – Constants, Variables and Data Types – Operators and Expressions – Managing Input and Output operations – Decision Making and Branching – Decision making and Looping.

UNIT III        ARRAYS AND FUNCTIONS                                                9

UNIT IV         STRUCTURES AND POINTERS                                             9

UNIT V          FILES AND DYNAMIC MEMORY ALLOCATION                                   8
File management in C – Defining and opening a file – closing a file - Input and Output operations on file – Error handling during IO operations – Random access to files – Command line Arguments. Dynamic memory allocation: Allocating a block of memory - Allocating a multiple block of memory – Releasing the used space – Altering the size of a block

L: 45 TOTAL: 45 PERIODS

TEXT BOOKS

REFERENCES
15IT26C ENVIRONMENTAL SCIENCE AND ENGINEERING (Common to all B.E. / B.Tech. Degree Programmes) L T P C 3 0 0 3

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: explain the structure and function of ecosystem. (K2)
CO 2: recognize the values of biodiversity and natural resources and the ways to protect the biodiversity of his /her locality. (K1)
CO 3: explain the causes and effects of pollution. (K2)
CO 4: describe social issues related to the environment and the environment act. (K2)
CO 5: identify the nutrients in food and impact of metals on human health. (K1)

UNIT I ENVIRONMENT AND ECOSYSTEMS
9
Scope and importance of environment – need for public awareness – ecosystem – structure and function of an ecosystem – energy flow in the ecosystem – forest and aquatic ecosystems – Field study of simple ecosystems – pond and forest.

UNIT II BIODIVERSITY AND NATURAL RESOURCES
9
Biodiversity: genetic, species and ecosystem diversity – threats to biodiversity – endangered and endemic species in India – conservation of biodiversity; forest resources: use and over-exploitation – deforestation - dams and their effects on forests and tribal people – water resources: use and overutilization of surface and ground water – role of an individual in conservation of natural resources.

UNIT III ENVIRONMENTAL POLLUTION
9

UNIT IV SOCIAL ISSUES, HUMAN POPULATION AND ENVIRONMENTAL LAW
9

UNIT V FOOD AND HUMAN HEALTH
9

L: 45 TOTAL: 45 PERIODS

TEXT BOOKS

REFERENCES
2. Strange C. “Environmental Science and production” Nason Trest Publisher, 2010
PART A – APPLIED PHYSICS LABORATORY

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: demonstrate the properties of optical materials. (K2, S3)
CO 2: analyze the characteristics of semiconducting materials and diodes and their applications. (K3, S3)
CO 3: analyze the thermal properties of materials. (K3, S3)

LIST OF EXPERIMENTS
1. (a) Determination of wave length of Laser source.
   (b) Particle size determination using Diode Laser.
   (c) Determination of Numerical aperture and acceptance angle of an optical fiber.
2. Determination of Band Gap of a semiconductor material.
4. V - I Characteristics of PN junction diode.
5. Half Wave and Full Wave Rectifiers.
7. Zener diode as Voltage Regulator.
8. Characteristics of LED/LCD.

P:15 TOTAL: 15 PERIODS

PART – B ENVIRONMENTAL CHEMISTRY LABORATORY

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: quantify the amount of acidity, alkalinity, DO and COD present in water sample. (K5, S3)
CO 2: analyse the ions present in the soil. (K4, S3)
CO 3: quantify the amount of chloride ion in water sample. (K5, S3)
CO 4: identify the adulteration in food samples. (K1, S3)
CO 5: estimate the amount of metal ions in water sample. (K5, S3)

LIST OF EXPERIMENTS
1. Estimation of acidity of Water sample.
2. Estimation of alkalinity of Water sample.
3. Determination of Dissolved Oxygen (DO) in water sample (Winkler’s method).
4. Determination of COD in water sample.
7. Estimation of chloride ion in water sample by argentometric method.
8. Simple adulteration test in food samples.

P:15 TOTAL: 15 PERIODS

- A minimum of FIVE experiments shall be offered.
- Laboratory classes on alternate weeks for Physics and Chemistry.
REFERENCES
15IT28C C PROGRAMMING LABORATORY (Common to all B.E. / B.Tech. Degree Programmes) L T P C 0 0 2 1

COURSE OUTCOMES

Upon completion of this course, the students will be able to
CO 1: solve the given problem using the syntactical structures of C language. (K3)
CO 2: develop, execute and document computerized solution for various logic based
problems using the flow control features of C language. (K3)
CO 3: enhance the programming skills in C by discriminating constants, variables and
arrays and the functionality. (K3)
CO 4: learn about the connection between function return values and variables. (K5)
CO 5: develop programs using string manipulation and file manipulation functions. (K3)

Simple programs
1. Solve problems such as temperature conversion, student grading, interest calculation.
2. Solving the roots of a quadratic equation
3. Designing a simple arithmetic calculator. (Use switch statement)
4. Given distance traveled by a vehicle as \( d = ut + \frac{1}{2}at^2 \), where ‘u’ and ‘a’ are the initial
   velocity and acceleration. Calculate the distance traveled for different time intervals

Programs using different control structures
5. Performing the following operations:
   a. Generate Pascal's triangle.
   b. Construct a Pyramid of numbers.
6. Generation of the first ‘n’ terms of the Fibonacci sequence and prime sequence.
8. Finding the 2’s complement of a binary number.

Programs using arrays
9. Performing the following operations:
   a. Matrix addition.
   b. Transpose of a matrix.
   c. Matrix multiplication by checking compatibility.

Programs using string manipulation
10. Performing the following operations to a string:
    a. To insert a sub-string into main string at a given position.
    b. To delete ‘n’ characters from a given position in a string.
    c. To replace a character of string either from beginning or ending or at a specified
        location.

Programs using functions
11. Performing the following operations: (Use recursive functions)
    a. To find the factorial of a given integer.
    b. To find the GCD (Greatest Common Divisor) of two given integers.
    c. To solve Towers of Hanoi problem.

Programs using files
12. Performing the Student Information Processing using Structures and File handling
    concepts.

P: 30 TOTAL: 30 PERIODS
15IT29C DIGITAL LABORATORY L T P C
0 0 2 1

COURSE OUTCOMES
Upon completion of this course, the students will be able to
CO 1: design and implement various applications using gates.
CO 2: simulate various combinational circuits using VHDL/PSPICE.

LIST OF EXPERIMENTS
1. Verification of Boolean theorems using digital logic gates.
2. Design and implementation of combinational circuits using basic gates for arbitrary functions, code converters, etc.
3. Design and implementation of 4-bit binary adder / subtractor using basic gates and MSI devices.
4. Design and implementation of parity generator / checker using basic gates and MSI devices.
5. Design and implementation of magnitude comparator.
6. Design and implementation of application using multiplexers/Demultiplexers.
7. Design and implementation of Shift registers.
8. Design and implementation of Synchronous and Asynchronous counters.
9. Simulation of combinational circuits using Hardware Description Language (VHDL/ Verilog HDL software required).
10. Simulation Experiments using PSPICE Software.

P: 30 TOTAL: 30 PERIODS