

EN101HS : Basics of English for Communication

B.Tech 1Year I Sem

(common to all Branches: CSE, CSE(AIML), ECE, EEE, Mechanical, Civil)

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INTRODUCTION

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students.

In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Learning Objectives: The course will help to

- Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
- Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.
- Develop study skills and communication skills in formal and informal situations.

Course Outcomes: Students should be able to

- Use English Language effectively in spoken and written forms.
- Comprehend the given texts and respond appropriately.
- Communicate confidently in various contexts and different cultures.
- Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.

SYLLABUS

UNIT –I ‘The Raman Effect’ from the prescribed textbook ‘English for Engineers’ published by Cambridge University Press.

Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.

Grammar: Identifying Common Errors in Writing with Reference to Articles and

Prepositions. **Reading:** Reading and Its Importance- Techniques for Effective Reading.

Basic Writing Skills: Sentence Structures -Use of Phrases and Clauses in Sentences-

Importance of Proper Punctuation- Techniques for writing precisely

Paragraph Writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents.

UNIT –II : ‘Ancient Architecture in India’ from the prescribed textbook ‘English for Engineers’ published by Cambridge University Press.

Vocabulary: Synonyms and Antonyms.

Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.

Reading: Improving Comprehension Skills – Techniques for Good Comprehension

Writing: Format of a Formal Letter-Writing Formal Letters in day- today Situations E.g., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III ‘Blue Jeans’ from the prescribed textbook ‘English for Engineers’ published by Cambridge University Press.

Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses.

Reading: Sub-skills of Reading- Skimming and Scanning

Writing: Nature and Style of Sensible Writing- Defining- Describing Objects, Places and Events – Classifying -- Providing Examples or Evidence

UNIT –IV ‘What Should You Be Eating’ from the prescribed textbook ‘English for Engineers’ published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English

Grammar: Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension- Intensive Reading and Extensive Reading

Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing-Précis Writing.

UNIT –V ‘How a Chinese Billionaire Built Her Fortune’ from the prescribed textbook ‘English for Engineers’ published by Cambridge University Press.

Vocabulary: Technical Vocabulary and their usage

Grammar: Common Errors in English

Reading: Reading Comprehension-Exercises for Practice

Writing: Technical Reports- Introduction – Characteristics of a Report – Categories of Reports -Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing a Report.

Textbook:

- Sudarshana, N.P. and Savitha, C. (2018). **English for Engineers**. Cambridge University Press.
- Simple English Grammar by Nalla Malla Reddy Publications

References:

1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press

MA102BS : MATHEMATICS – I (LINEAR ALGEBRA & CALCULUS)

B.Tech. I Year I Sem

(common to all Branches: CSE, CSE(AIML), ECE, EEE, Mechanical, Civil)

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Course Objectives: To learn

- Types of matrices and their properties.
- Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of Eigen values and eigenvectors and to reduce the quadratic form to canonical form
- Concept of Sequence.
- Concept of nature of the series.
- Geometrical approach to the mean value theorems and their application to the mathematical problems
- Evaluation of surface areas and volumes of revolutions of curves.
- Partial differentiation, concept of total derivative
- Finding maxima and minima of function of two and three variables.
- Evaluation of improper integrals using Beta and Gamma functions.
- Finding Curvature and Radius of Curvature

Course Outcomes:

After learning the contents of this course, the student must be able to

- Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations
- Find the Eigen values and Eigen vectors
- Reduce the quadratic form to canonical form using orthogonal transformations.
- Analyse the nature of sequence and series.
- Solve the applications on the mean value theorems.
- Find the extreme values of functions of two variables with/ without constraints.
- Evaluate the improper integrals using Beta and Gamma functions
- Find Curvature and Radius of Curvature in Cartesian form and Polar form.

UNIT-I: Matrices: Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method.

UNIT-II: Eigen values and Eigen vectors: Linear Transformation and Orthogonal Transformation: Eigen values and Eigenvectors and their properties: Diagonalization of a

matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT-III: Sequences & Series: Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences. Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D-Alembert's ratio test; Raabe's test; Cauchy's Integral test; Cauchy's root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence.

UNIT-IV: Calculus: Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem. Taylor's Series. Euler's Theorem; Total derivative; Jacobian; Functional dependence & independence, Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

UNIT-V: Special Functions and Curvature

Definition of Improper Integral: Beta and Gamma functions- introduction , properties

Relation between beta and gamma and their applications.

Introduction to Curvature and Radius of curvature (Cartesian and Polar form).

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

REFERENCES:

1. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
2. B.V Ramana., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
3. R. K. Jain and S. R. K. Iyengar, Advanced Engineering Mathematics, Alphasience International Ltd.

PH103BS: ENGINEERING PHYSICS

B.Tech. I Year I Sem (Common to CE&ME)

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Pre-Requisites: Fundamentals of Physics and Mathematics (Trigonometry & Calculus).

Course Objectives:

- To make the students aware of the transformation of vectors under rotation, forces in nature, Newton's equations using different kinds of co-ordinates and motion with constraints for solving problems in mechanics.
- To demonstrate the mechanical and electrical oscillators as well as the damped harmonic oscillator and different cases under it along Q-factor and power.
- To make the students to widen the conceptual understanding of the fundamental principles of interference and diffraction.
- To impart the knowledge of Lasers and optical fibers along with applications.
- To discuss the concepts of dielectric and magnetic materials and their properties for various applications.

Course outcomes: At the end of the course, the students will be able to

- Apply the knowledge of mechanics to solve problems involving common engineering elements.
- Discuss the importance of damped harmonic oscillator, mechanical and electrical oscillators in the existing devices which eventually lead to new innovations and improvements.
- Learn the optical Phenomena Interference, diffraction and apply them in engineering applications.
- Compare different kinds of lasers and optical fibers for various applications such as communication, manufacturing and so on.
- Analyze the engineering applications using magnetic and dielectric properties of materials.
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UNIT-I: Introduction to Mechanics

Transformation of scalars and vectors under rotation, Introduction to Tensors, stress and strain tensor, Forces in Nature, Newton's laws and its completeness in describing particle motion, Form invariance of Newton's second law, Solving Newton's equations of motion in polar coordinates, cylindrical and spherical coordinates. Problems on constraints and friction.

UNIT-II: Harmonic Oscillations

Introduction, Complex number notation and phasor representation of simple harmonic motion, Damped harmonic oscillators (Mechanical and electrical), Energy decay in a damped harmonic oscillator, Quality factor, Steady state motion of forced damped harmonic oscillator (Mechanical and electrical), Power dissipation in oscillator.

UNIT-III: Wave Optics

Introduction to waves, Huygens's principle, Superposition of waves and interference of light

by division of wave front and division of amplitude, Young's double slit experiment,

Newton's rings, Michelson's interferometer, Mach-Zehnder interferometer, Fraunhofer diffraction due to a single slit and circular aperture, Diffraction grating: Principle, Experiment. Resolving power of a prism.

UNIT-IV: Lasers and Fiber Optics

Lasers: Introduction to interaction of radiation with matter, Coherence, Principle and working of Laser, Population inversion, Pumping mechanisms, Types of Lasers: Ruby laser, He-Ne laser, Carbon dioxide (CO₂) laser, Semiconductor Laser, Applications of laser. Fiber Optics: Introduction, Working Principle of an optical fiber, Acceptance angle, Acceptance cone and Numerical aperture, Step and Graded index fibers, Losses associated with optical fibers, Applications of optical fibers: communication systems and Sensors (Pressure and temperature sensors).

UNIT-V: Dielectric and Magnetic properties of Materials:

Introduction, Bound charges, Dipole moment, Polarization, Permittivity and Dielectric constant, Internal fields in a solid, Ferroelectrics, Piezoelectric and Pyro electrics, Applications of dielectrics.

Origin of magnetic moment, Bound currents, Magnetic field, Magnetic induction, Magnetization, Permeability and Susceptibility, Classification of magnetic materials (dia, para, ferro, antiferro and ferri), Weiss theory of ferromagnetism, Hysteresis, Applications of magnetic materials.

TEXT BOOKS:

1. Engineering Mechanics, 2nd ed.- MK Harbola, Cengage Learning
2. Dr. TVS Arun Murthy, Dr.M.N.Avadhanulu ., Engineering Physics, C.Chand.,
3. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learning.
4. I. G. Main, "Vibrations and waves in physics", 3rd Edn, Cambridge University Press, 2018.
5. Ajoy Ghatak, " Optics", McGraw Hill Education, 2012
6. Concepts in Modern Physics by Arthur Beiser

REFERENCES:

1. "Introduction to Mechanics", 2nd ed.-M.K.Verma, Universities Press
2. H. J. Pain, "The physics of vibrations and waves", Wiley, 2006
3. O. Svelto, "Principles of Lasers"

ME104ES: ENGINEERING GRAPHICS

B.Tech. I Year I Sem (CIVIL, Mechanical Engineering)

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Pre-requisites: Nil

Course

objectives:

- To provide basic concepts in engineering drawing.
- To impart knowledge about standard principles of orthographic projection of objects.
- To draw sectional views and pictorial views of solids.

Course Outcomes: At the end of the course, the student will be able to:

- Prepare working drawings to communicate the ideas and information.
- Read, understand and interpret engineering drawings.
- Convert orthographic views into isometric and vice versa.

UNIT – I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Scales – Plain & Diagonal.
Practice on Cad Packages (for internal evaluation only)

UNIT- II

Orthographic Projections: Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures. Auxiliary Planes.
Practice on Cad Packages (for internal evaluation only)

UNIT – III

Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone.
Practice on Cad Packages (for internal evaluation only)

UNIT – IV

Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Intersection of Solids: Intersection of – Prism vs Prism- Cylinder Vs Cylinder.
Practice on Cad Packages (for internal evaluation only)

UNIT – V

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa –Conventions
Practice on Cad Packages (for internal evaluation only)
Introduction to CAD: (For Internal Evaluation Weightage only):
Introduction to CAD Software Package Commands, Creating Basic Drawings, Manipulating

Objects, Drawing Organization and Inquiry Commands, Altering Objects, Annotating Drawings, Hatching Object Dimensioning, Working with Reusable Content, Creating

Additional Drawing Objects, Free Hand Sketches of 2D, Creation of 2D Sketches by CAD Package

TEXT BOOKS:

1. Engineering Drawing, N.D. Bhatt, Charotar
2. Engineering Drawing, N. S. Parthasarathy and Vela Murali, Oxford

REFERENCE BOOKS:

1. Engineering Drawing, Basant Agrawal & C M Agrawal, McGraw Hill
2. Engineering Drawing, M. B. Shah, B.C. Rane / Pearson.
3. Computer Aided Engineering Drawing, K Balaveera Reddy et al, CBS Publishers.

CS105ES: C PROGRAMMING

B.Tech IYear I Sem

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(common to all Branches: CSE, CSE(AIML), ECE, EEE, Mechanical, Civil) 2 1 0 3

Course Objectives:

The course should enable the students to:

- Learn logic building to apply for any given problem.
- Understand programming skills using the fundamentals and basics of C Language.
- Improve problem solving skills using arrays, strings, and functions.
- Understand the dynamics of memory by pointers.
- Study files creation process with access permissions.

Course Outcomes:

- Describe the concept of computer system, analyze a given problem, develop algorithm, fundamental programming constructs, identify data representation formats, and describe operators and their precedence, associativity.
- Understand branching and loop statements.
- Describe the concept of homogeneous derived data types, strings and functions.
- Understand pointers and heterogeneous data types.
- Describe the concept of file system.

UNIT - I INTRODUCTION

Introduction to Programming: Computer system, components of a computer system, computing environments, computer languages, creating and running programs, algorithms, flowcharts; Introduction to C language: Computer languages, History of C, basic structure of C programs, process of compiling and running a C program, C tokens, keywords, identifiers, constants, strings, special symbols, variables, data types; Operators and expressions.

UNIT - II CONTROL STRUCTURES

Conditional Control structures: Decision statements; Simple if, if-else, else if ladder, Nested if and Case Statement-switch statement; Loop control statements: while, for and do while loops. jump statements, break, continue, goto statements

UNIT - III ARRAYS AND FUNCTIONS

Arrays: Concepts, one dimensional arrays, declaration and initialization of one dimensional arrays, two dimensional arrays, initialization and accessing, multi-dimensional arrays; Strings: Arrays of characters, variable length character strings, inputting character strings, character library functions, string handling functions.

Functions: Need for user defined functions, function declaration, function prototype, category of functions, inter function communication, function calls, parameter passing mechanisms, recursion, passing arrays to functions, passing strings to functions, storage classes, preprocessor directives

UNIT - IV STRUCTURES, UNIONS AND POINTERS

Structures and unions: Structure definition, initialization, accessing structures, nested structures, arrays of structures, structures and functions, passing structures through pointers, self-referential structures, unions, bit fields, typedef, enumerations;

Pointers: Pointer basics, pointer arithmetic, pointers to pointers, generic pointers, array of pointers, pointers and arrays, pointers as functions arguments, functions returning pointers. Dynamic memory allocation: Basic concepts, library functions.

UNIT - V FILE HANDLING AND BASIC ALGORITHMS

Files: Streams, basic file operations, file types, file opening modes, input and output operations with files, special functions for working with files, file positioning functions, command line arguments. Searching, basic sorting algorithms (bubble, insertion, selection), algorithm complexity through example programs (no formal definitions required).

Text Books:

1. Byron Gottfried, "Programming with C", Schaum's Outlines Series, McGraw Hill Education, 3rd Edition, 2017.
2. E. Balagurusamy, "Programming in ANSI C", McGraw Hill Education, 6th Edition, 2012.

Reference Books:

1. W. Kernighan Brian, Dennis M. Ritchie, "The C Programming Language", PHI Learning, 2nd Edition, 1988.
2. Yashavant Kanetkar, "Exploring C", BPB Publishers, 2nd Edition, 2003.
3. Schildt Herbert, "C: The Complete Reference", Tata McGraw Hill Education, 4th Edition, 2014.
4. R. S. Bichkar, "Programming with C", Universities Press, 2nd Edition, 2012.
5. Dey Pradeep, Manas Ghosh, "Computer Fundamentals and Programming in C", Oxford University Press, 2nd Edition, 2006.
6. Stephen G. Kochan, "Programming in C", Addison-Wesley Professional, 4th Edition

PH106BS: ENGINEERING PHYSICS LAB

B.Tech. I Year I Sem

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Pre-Requisites: Practical skills

Course Objectives:

- To generate stationary waves using Melde's apparatus and understand the rigidity modulus of the given wire.
- To explain about the electrical resonance by using the LCR circuit.
- To study the Hall coefficient; the characteristics of LED and LASER diode.
- Discuss the dispersive power of prism-minimum deviation method.
- To determine the spring constant by coupled oscillator.
- To Study the bending losses and numerical aperture of an optical fiber cable.

Course Outcomes:

After completing the experiment, students will be able to

- Discuss the concepts of semiconductors, optoelectronic devices such as LED and LASER.
- Summarize the fundamentals of elasticity, harmonic oscillator and to know the frequency of the electrically maintained tuning fork.
- Apply the concepts of the fiber optics, fundamentals and attenuation in fiber and applications.
- Analyze the Hall Effect and the bandwidth of LCR circuit.
- Know about the light properties-dispersion, prism, spectrometer and minimum deviation arrangement.

List of Experiments:

1. Melde's experiment: To determine the frequency of a vibrating bar or tuning fork using Melde's arrangement.
2. Torsional pendulum: To determine the rigidity modulus of the material of the given wire using torsional pendulum.
3. Newton's rings: To determine the radius of curvature of the lens by forming Newton's rings.
4. Diffraction grating: To determine the number of lines per inch of the grating.
5. Dispersive power: To determine the dispersive power of prism by using spectrometer.
6. Coupled Oscillator: To determine the spring constant by single coupled oscillator.
7. LCR Circuit: To determine quality factor and resonant frequency of LCR circuit.
8. LASER: To study the characteristics of LASER sources.
9. Optical fiber: To determine the bending losses and Numerical aperture of Optical fibres.
10. Hall effect: To determine Hall coefficient of a given semiconductor.

Note: 1) Measure error of result (error analysis) for each and every experiment. Reference:

- Engineering Physics Lab Manual by Dr. Y. Aparna & Dr. K. Venkateswarao (V.G.S. Book links)

CS107ES: C PROGRAMMING LAB

B.Tech 1Year I Sem

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(common to all Branches: CSE, CSE(AIML), ECE, EEE, Mechanical, Civil) 0 0 3 1.5

Course Outcomes:

The candidate is expected to be able to:

- formulate algorithms for simple problems
- translate given algorithms to a working and correct program
- correct syntax errors as reported by the compilers
- identify and correct logical errors encountered during execution
- represent and manipulate data with arrays, strings and structures
- use pointers of different types
- create, read and write to and from files
- modularize the code with functions so that the code can be reused

WEEK-1

Student should be able to draw and run the flow charts using Raptor tool.

WEEK-2

Student should be apply to construct programs to demonstrate variables of different data types, operators, and expressions .

WEEK-3

Student should be able to construct programs to demonstrate appropriate control statements (one way, two way, multi-way selection) .

WEEK-4

Student should be able to construct programs to demonstrate appropriate control statements (pre controlled, exit controlled loop) .

WEEK-5

Student should be able to construct programs to demonstrate combination of selection and loop statements by nesting one statement inside another statement.

WEEK-6

Student should be able to construct programs to demonstrate arrays(one-dimensional) to work with collection of homogeneous data.

WEEK-7

Student should be able to construct programs to demonstrate arrays(two-dimensional) to work with collection of homogeneous data.

WEEK-8

Student should be able to construct programs to demonstrate structures to work with collection of heterogeneous data.

WEEK-9

Student should be able to modularize the program into functions and demonstrate inter-function communication(call-by-value , call-by-reference).

WEEK-10

Student should be able to construct programs to demonstrate self referential structure to build and work with linked lists.

WEEK-11

Student should be able to construct programs to demonstrate streams to handle text files (open, read, write, append ,close).

Note: Formatted data and unformatted data .

WEEK-12

Student should be able to construct programs to demonstrate streams to handle binary files (open, read, write, append, close).

WEEK-13

Student should be able to construct programs to demonstrate various operations on strings (copy, insert substring, delete substring .

WEEK-14

Student should be able to demonstrate various searching techniques on the given list of elements.

WEEK-15

Student should be able to demonstrate various sorting techniques on the given list of elements

Note: Weekly objectives have been specified in the above syllabus. The teacher should design specific problems in each week by giving a suitable scenario or requirements.

References:

- C Programming Quick Reference, Published by Nalla Malla Reddy Engineering College

*MC108HS: Environmental Sciences

B.Tech I Year I Sem (ECE,CIVIL,Mechanical Engineering)

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Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations.

Course Outcomes:

- Based on this course, the Engineering graduate will understand/evaluate/develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity.

UNIT-II

Natural Resources: Classification of Resources: Living and non-living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land resources: Forest resources, Energy resources: growing energy needs, renewable and non-renewable energy sources, use of alternate energy source, case studies.

UNIT-III

Biodiversity and Biotic Resources: Introduction, definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: *in-situ* and *ex-situ* conservation.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants, automobile and industrial pollution, ambient air quality standards. Water pollution: Sources and types of pollution, drinking water quality standards. Soil Pollution: Sources and types, impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and health hazards, standards, Solid waste: Composition and characteristics of *e-Waste* and its management. Pollution control technologies: Wastewater treatment methods: Primary, secondary and tertiary. Overview of air pollution control technologies, global environmental issues and global efforts: Climate change and impacts on human environment. Ozone depletion and ozone depleting substances (ODS). Earth summit, Kyoto protocol, NAPCC-GoI Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental protection act, municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. **EIA:** EIA structure, methods of baseline data acquisition. **Towards sustainable future:** Concept of sustainable development goals, population and its explosion, crazy consumerism, urban sprawl, human health, environmental Ethics, concept of green building, ecological foot print, life cycle assessment (LCA), low carbon life style.

TEXT BOOKS:

1 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.

2 Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.

2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.

3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.

4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.

5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, B. S Publications.

6. Introduction to Environmental Science by Y. Anjaneyulu, B. S. Publications.

MA201BS: MATHEMATICS - II

(DIFFERENTIAL EQUATIONS & INTEGRAL CALCULUS)

B.Tech. I Year II Sem

(common to all Branches: CSE, CSE(AIML), ECE, EEE, Mechanical, Civil)

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Course Objectives: To learn

- Methods of solving the differential equations of first and higher order.
- Evaluation of multiple integrals and their applications
- The physical quantities involved in engineering field related to vector valued functions
- The basic properties of vector valued functions and their applications to line, surface and volume integrals

Course Outcomes: After learning the contents of this paper the student must be able to

- Identify whether the given differential equation of first order is exact or not
- Solve higher differential equation and apply the concept of differential equation to real world problems
- Evaluate the multiple integrals and apply the concept to find areas, volumes, center of mass and Gravity for cubes, sphere and rectangular parallelepiped.
- Evaluate directional derivative, tangent line, normal line, vector identities.
- Evaluate the line, surface and volume integrals and converting them from one to another

UNIT-I

First Order ODE: Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay, Orthogonal trajectories (Cartesian, polar form).

UNIT-II

Ordinary Differential Equations of Higher Order: Second order linear differential equations with constant coefficients: Non-Homogeneous functions of the type e^{ax} , $\sin ax$, $\cos ax$, polynomials in x^k , $e^{ax}(x)$ and (x) ; method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT-III

Multivariable Calculus (Integration): Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple

Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals.

Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals).

UNIT-IV

Vector Differentiation: Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V

Vector Integration: Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

REFERENCES:

1. Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishes
2. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.
3. R. K. Jain and S. R. K. Iyengar, Advanced Engineering Mathematics, Alphascience International Ltd.

CH202BS: ENGINEERING CHEMISTRY

B.Tech I Year II Sem (ECE,CIVIL,Mechanical Engineering)

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Prerequisite:

Students should have basic knowledge of chemistry at pre university level.

Course Objectives:

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To impart the basic knowledge of atomic, molecular and electronic modifications which makes the student to understand the technology based on them.
- To acquire the knowledge of electrochemistry, corrosion and water treatment which are essential for the Engineers and in industry.
- To acquire the skills pertaining to spectroscopy and to apply them for medical and other fields.
- To impart the knowledge of polymers and synthetic aspects useful for understanding reaction pathways.

Course Outcomes: After completion of the course the student should be able to

- CO1: Analyze microscopic chemistry in terms of atomic and molecular orbitals and apply in determination of various properties.
- CO2: Analyze water for its various parameters and explain the problems caused by hard water in the industry and its treatment methods.
- CO3: Apply and relate the principles and concepts of electrochemistry and corrosion.
- CO4: Understand the synthesis and applications of polymer science
- CO5: Illustrate the cleavage and stability of organic molecules and apply synthetic aspects to predict reaction mechanism.
- CO6: Develop and understanding of the different kinds of spectroscopic techniques and its applications in various fields.

Unit - I:

Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexometric method. Potable water and its specifications. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

Unit - II:

Molecular structure and Nano Materials: Atomic and Molecular orbitals. Linear Combination of Atomic Orbitals (LCAO), molecular orbitals of diatomic molecules, molecular orbital energy level diagrams of N₂, O₂ and F₂ molecules. π molecular orbitals of butadiene and benzene. Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metal ion d-orbitals in Tetrahedral, Octahedral and square planar geometries.

Nano Materials: Introduction, Preparation- CVD and sol-gel method and applications.

Unit - III:

Electrochemistry and Corrosion: Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – calomel and glass electrode. Nernst equation. Determination of pH of a solution by using glass electrode. Electrochemical series and its applications. Numerical problems. Batteries-Secondary batteries (Lead – acid storage battery and Lithium ion battery). Fuel cell and advantages e.g : H₂-O₂ fuel cell.

Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection– Sacrificial anode and impressed current cathodic protection. Surface coatings – metallic coatings – methods of application. Electroless plating of Nickel.

Unit - IV:

Basic principles of organic chemistry: Introduction to reaction intermediate, Substitution reactions: Nucleophilic substitution reactions: Mechanism of SN1, SN2 reactions. Electrophilic addition reactions: Addition of HBr to propene. Markownikoff and anti-Markownikoff's additions. Nucleophilic addition reaction: Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule.

Polymers: Introduction, classification, types of polymerization – addition and condensation polymerization with examples. Plastics: Definition and characteristics-thermoplastic and thermosetting plastics. Preparation, properties and engineering applications of PVC and Bakelite. Fibers: Characteristics of fibers – preparation, properties and applications of Nylon-6 and Dacron. Conducting Polymers (polyaniline). Polymer based OLED's.

Unit - V:

Spectroscopic techniques and applications: Principles of spectroscopy, selection rules and applications of electronic spectroscopy. Vibrational and rotational spectroscopy (IR). Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift. Introduction to Magnetic resonance imaging.

TEXT BOOKS:

1. Engineering Chemistry by P. Rath, R. Ramadevi, Ch. V. R. Reddy & S. Chakroborty; Cengage publications.
2. Engineering Chemistry by Dr.Y Bharathi Kumari; V G S publications.
3. Engineering Chemistry by S S Dara; S Chand publications.
4. Engineering Chemistry by M. Tirumala Chary, V. Laxminarayana & A. Shashikala; Pearson publications.
5. Engineering Chemistry by Shashi Chawla; Dhanapat Rai Publications.

REFERENCE BOOKS:

1. Engineering Chemistry by P. C. Jain & M. Jain; Dhanpat Rai Publishing Company (P) Ltd., New Delhi.
2. Physical Chemistry, by P.W. Atkins.
3. Fundamentals of Molecular Spectroscopy, by C.N. Banwell.

4. Organic Chemistry: Structure and Function by K.P.C. Volhardt and N.E. Schore, 5th Edition.
5. University Chemistry, by B.M. Mahan, Pearson IV Edition.
6. Engineering Chemistry (NPTEL Web-book), by B. L. Tembe, Kamaluddin and M. S. Krishnan. Ltd.

ME203ES: ENGINEERING MECHANICS

B.Tech. I Year II Sem (Civil, Mechanical Engineering)

L T/P/D

C 3 1/0/0

4

Pre-requisites: Engineering Physics

Course Objectives:

The objectives of this course are to

- Explain the resolution of a system of forces, compute their resultant and solve problems using equations of equilibrium
- Perform analysis of bodies lying on rough surfaces.
- Locate the centroid of a body and compute the area moment of inertia and mass moment of inertia of standard and composite sections
- Explain kinetics and kinematics of particles, projectiles, curvilinear motion, centroidal motion and plane motion of rigid bodies.
- Explain the concepts of work-energy method and its applications to translation, rotation and plane motion and the concept of vibrations

Course Outcomes: At the end of the course, students will be able to

- Determine resultant of forces acting on a body and analyze equilibrium of a body subjected to a system of forces.
- Solve the problem of bodies subjected to friction.
- Find the location of the centroid and calculate moment of inertia of a given section.
- Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion.
- Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems of vibration.

UNIT-I:

Introduction to Engineering Mechanics - Force Systems: Basic concepts, Particle equilibrium in 2-D & 3-D; Rigid Body equilibrium; System of Forces, Coplanar Concurrent Forces, Components in Space – Resultant- Moment of Forces and its Application; Couples and Resultant of Force System, Equilibrium of System of Forces, Free body diagrams, Equations of Equilibrium of Coplanar Systems and Spatial Systems; Static Indeterminacy

UNIT-II:

Friction: Types of friction, Limiting friction, Laws of Friction, Static and Dynamic Friction; Motion of Bodies, wedge friction, screw jack & differential screw jack; Centroid and Centre of Gravity -Centroid of Lines, Areas and Volumes from first principle, centroid of composite sections; Centre of Gravity and its implications. – Theorem of Pappus

UNIT-III:

Area moment of inertia- Definition, Moment of inertia of plane sections from first principles, Theorems of moment of inertia, Moment of inertia of standard sections and composite sections; Product of Inertia, Parallel Axis Theorem, Perpendicular Axis Theorem Mass Moment of Inertia: Moment of Inertia of Masses - Transfer Formula for Mass Moments of Inertia – Mass moment of inertia of composite bodies.

UNIT-IV:

Review of particle dynamics- Rectilinear motion; Plane curvilinear motion (rectangular, path, and polar coordinates). 3-D curvilinear motion; Relative and constrained motion; Newton's 2nd law (rectangular, path, and polar coordinates). Work-kinetic energy, power, potential energy. Impulse-momentum (linear, angular); Impact (Direct and oblique).

UNIT-V:

Kinetics of Rigid Bodies -Basic terms, general principles in dynamics; Types of motion, Instantaneous centre of rotation in plane motion and simple problems; D'Alembert's principle and its applications in plane motion and connected bodies; Work Energy principle and its application in plane motion of connected bodies; Kinetics of rigid body rotation

TEXT BOOKS:

1. Shames and Rao (2006), Engineering Mechanics, Pearson Education
2. Reddy Vijay Kumar K. and J. Suresh Kumar (2010), Singer's Engineering Mechanics – Statics & Dynamics

REFERENCE BOOKS:

1. Timoshenko S.P and Young D.H., "Engineering Mechanics", McGraw Hill International Edition, 1983.
2. Andrew Pytel, Jaan Kiusalaas, "Engineering Mechanics", Cengage Learning, 2014.
3. Beer F.P & Johnston E.R Jr. Vector, "Mechanics for Engineers", TMH, 2004.
4. Hibbeler R.C & Ashok Gupta, "Engineering Mechanics", Pearson Education, 2010.
5. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.
6. Basudeb Bhattacharyya, "Engineering Mechanics", Oxford University Press, 2008.
7. Meriam. J. L., "Engineering Mechanics", Volume-II Dynamics, John Wiley & Sons, 2008.

EN204HS: English Language and Communication Skills Lab

B.Tech 1Year II Sem

(common to all Branches: CSE, CSE(AIML), ECE, EEE, Mechanical, Civil)

L T P C

1 0 2 2

The English Language Communication Skills Lab focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

English Language and Communication Skills Lab (ELCS) shall have two parts: a. Writing Skills/Practice Lab and b. Interactive Communication Skills (ICS) Lab

Course Objectives

Listening Skill and Speaking Skills:

- To enable students develop their listening skills so that they appreciate its role in the LSRW skills approach to language and improve their pronunciation
- To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.
- To involve students in speaking activities in various contexts
- To enable students express themselves fluently and appropriately in social and professional contexts

Writing Skills:

- The students will brainstorm and organize their ideas.
- The students will use mechanics of writing appropriately.
- The students will use appropriate cohesive devices to improve their written texts.
- The students will incorporate appropriate vocabulary to express ideas precisely.
- The students will learn how to summarize to improve their writing.
- The students will produce a written response based on the information in the reading and listening texts.

Learning Outcomes: Students will be able to attain

- Better understanding of nuances of English language through audio- visual experience and group activities
- Neutralization of accent for intelligibility
- Speaking skills with clarity and confidence which in turn enhances their employability skills
- Writing coherent, logical and organized opinion essay with a thesis statement, introduction, body paragraphs and conclusion.

Exercise – I

ICS Lab:

Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening. Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

Understand: Communication at Work Place- Spoken vs. Written language. Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

Writing Practice Lab: Dialogue -Writing

Writing Dialogues in Various Situations viz., At the Bank, At the Hospital, At the Principal's Office, At the Inaugural Function of College Day Celebrations... etc

Exercise – II

ICS Lab:

Understand: Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context

Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

Understand: Features of Good Conversation – Non-verbal Communication

Practice: Situational Dialogues – Role-Play- Expressions in Various Situations

–Making Requests and Seeking Permissions - Telephone Etiquette.

Writing Practice Lab: Listen and Write

Dictation: Dictate tongue twisters and check the spellings.

Story Rewriting: The teacher reads a story or the class listens to an audio story one or two time. Then they can rewrite the story as it is understood.

Visualization: The students close their eyes and the teacher describes a scene.

Play some nice background music. The students then write and describe the scene they imagined, sharing their scene afterward with the class or a classmate.

Exercise - III

ICS Lab:

Understand: Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI). Practice: Common Indian Variants in Pronunciation – Differences in

British and American Pronunciation.

Understand: How to make Formal Presentations Practice: Formal Presentations.

Writing Practice Lab: Watch and Write

Write Captions: Students watch a video on a Commercial Product. Then, they write their own script in the form of a captivating caption about the commercial product.

Short *Documentaries:* Students watch a short Documentary and write their reflections on it.

Newscasts and Weather Reports: Watch the daily news or weather report (online). Students write in groups or individually, their own version of the news for that day. Then perform for the class like a real news report.

Exercise – IV
ICS Lab:

Understand: Listening for General Details. Practice: Listening Comprehension Tests.
Understand: Public Speaking – Exposure to Structured Talks. Practice: Making a Short Speech – Extempore.

Writing Practice Lab: Look and Write

Picture Description: Students can describe a scene or they can describe a series of pictures from a magazine/newspaper.
Knit a Story: Provide students with a sequence of pictures which are scrambled. The students must order the pictures and then write a story in an Interesting Way.

Exercise – V

ICS Lab:

Understand: Listening for Specific Details. Practice: Listening Comprehension Tests. Understand: Interview Skills. Practice: Mock Interviews.

Writing Practice Lab: Read and Write

Reading an Article/Editorial and Writing a Response: The students read a piece of writing and then respond by writing a reflective analysis.
Rewrite a Short Story: Read a short story and then give students a copy of the story with some text missing. The students can fill it in with the correct version or fill it in and make the story of their own.
Giving Advice to the Problem: A Case Study will be given to students and they are asked to give solution to the problem in writing.

(Note: The above course content is prescribed for the English Language and Communication Skills Lab. The teachers are required to collectively prepare teaching/learning materials in the form of handouts based on the topics and needs of the students for effective teaching/learning and time saving in the Lab)

Requirement of infrastructural facilities for ELCS Lab:

A Spacious room with movable chairs and audio-visual aids with a Public-Address System to enable video material projection, and interactive communication of the students along with writing facility

Material:

- Communication Skills-1 by Nalla Malla Reddy Engineering College
- Communication Skills-2 by Nalla Malla Reddy Engineering College
- Communication Skills-3 by Nalla Malla Reddy Engineering College
- Communication Skills-4 by Nalla Malla Reddy Engineering College
- Simple English Grammar by Nalla Malla Reddy Publications

CH205BS: Engineering Chemistry Lab

B.Tech I Year II Sem (ECE, Civil, Mechanical Engineering)

L T P C
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Prerequisite:

Students should have basic knowledge of chemistry at pre university level.

Course Objectives:

The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:

- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- The measurement of physical properties like adsorption and viscosity.
- To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

Course Outcomes:

The experiments will make the student gain skills on:

- Determination of parameters like hardness and chloride content in water.
- Estimation of rate of corrosion of mild steel.
- Determination of physical properties like adsorption and viscosity.
- Calculation of R_f values of some organic molecules by TLC technique.

List of Experiments:

1. Determination of total hardness of water by complexometric method using EDTA.
2. Determination of chloride content of water by Argentometry.
3. Estimation of an HCl by Conductometric titrations.
4. Estimation of mixture of acids by Conductometric titrations.
5. Estimation of HCl by Potentiometric titrations.
6. Estimation of Fe^{2+} by Potentiometry using $K_2Cr_2O_7$.
7. Synthesis of Phenol-Formaldehyde resin (Bakelite).
8. Synthesis of Aspirin.
9. Thin layer chromatography calculation of R_f values. eg *ortho* and *para* nitro phenols.
10. Determination of acid value of coconut oil.
11. Determination of partition coefficient of acetic acid between n-butanol and water
12. Determination of viscosity of given organic liquid by using Ostwald's Viscometer.
13. Determination of rate of corrosion of mild steel in acidic environment in the absence and presence of an inhibitor.
14. Determination of surface tension of a given liquid using Stalagmometer.

NOTE: 10 Experiments to be performed.

REFERENCE BOOKS:

1. Engineering Chemistry Laboratory manual by Nalla Malla Reddy Engineering College
2. Senior practical physical chemistry, B. D. Khosla, A. Gulati and V. Garg; R. Chand & Co., New Delhi.
3. An introduction to practical chemistry, K.K. Sharma and D. S. Sharma; Vikas publishing, New Delhi.
4. Vogel's textbook of practical organic chemistry 5th edition by Furniss and Brians, Hannaford and J. Antony; Pearson India.
5. Text book on Experiments and calculations in engineering chemistry, S.S. Dara; S Chand publications.

CS206ES: Python Programming Lab

B.Tech. I Year II Sem.

(common to all Branches: CSE, CSE(AIML), ECE, EEE, Mechanical, Civil)

L T P C

1 0 2 2

Prerequisites: Basic C Programming course, and should install Python on Linux platform.

Course Objectives:

- To be able to introduce core programming basics and program design with functions using Python programming language.
- To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.
- To understand the high-performance programs designed to strengthen the practical expertise.

Course Outcomes:

- Student should be able to understand the basic concepts scripting and the contributions of scripting language.
- Ability to use functions and represent Compound data using Lists, Tuples and Dictionaries.
- Ability to read and write data from & to files in Python and develop applications.
- Demonstrate proficiency in writing robust programs handling errors and exceptions properly.
- Ability to use multithreading for simultaneous execution of different parts of a program.

List of Programs:

Week 1:

Topics: Introduction, Identifiers, Keywords, Operators, Data Types, Indentation, Reading Input, Print Output, type() function.

Lab Exercises:

1. Student should be able to demonstrate different number data types in Python.
2. Student should be able to perform different Operations on numbers in Python.

Week 2:

Topics: Strings, Creating and Storing Strings, Basic String Operations, Accessing Characters in String by Index Number, String Slicing and Joining, String Methods, Formatting Strings.

Lab Exercises:

1. Student should be able to create, concatenate and print a string and accessing sub- string from a given string.
2. Student should be able to print the current date in different formats.

Week 3:

Topics: The if Decision Control Flow Statement, The if...else Decision Control Flow Statement, The if...elif...else Decision Control Statement, Nested if Statement, The while Loop, The for Loop, The continue and break Statements.

Lab Exercises:

Student should be able to demonstrate the usage of various iterative statements like *for* and *while* with different programs.

Week 4:

Topics: Functions, Built-In Functions, Commonly Used Modules, Function Definition and Calling the Function, The return Statement and void Function.

Lab Exercises:

Student should be able to create (define) and call a user defined functions in Python.

Week 5:

Topics: Lists, Creating Lists, Basic List Operations, Indexing and Slicing in Lists, Built-In Functions Used on Lists, List Methods, The del Statement.

Lab Exercises:

Student should be able to demonstrate working with various operations (methods) of lists in python.

Week 6:

Topics: Tuples, Creating Tuples, Basic Tuple Operations, Indexing and Slicing in Tuples, Built-In Functions Used on Tuples, Relation between Tuples and Lists, Tuple Methods.

Lab Exercises:

Student should be able to demonstrate working with Tuples in python.

Week 7:

Topics: Sets, Using zip() Function, Sets, Set Methods, Traversing of Sets, Frozen set.

Lab Exercises:

Student should be able to demonstrate working with Sets in python.

Week 8:

Topics: Dictionaries, Creating Dictionary, Accessing and Modifying key:value Pairs in Dictionaries, Built-In Functions Used on Dictionaries, Dictionary Methods, The del Statement.

Lab Exercises:

Student should be able to demonstrate working with dictionaries in python.

Week 9:

Topics: Files, Types of Files, Creating and Reading Text Data, File Methods to Read and Write Data, Reading and Writing Binary Files.

Lab Exercises:

1. Student should be able to write a script named **copyfile.py**. This script should prompt the user for the names of two text files. The contents of the first file should be input and written to the second file.

2. Student should be able to input a text file to program and print all of the unique words in the file in alphabetical order.

Week 10:

Topics: Exceptions, Exceptions in Python, Detecting and Handling Exceptions, Exceptions related Modules.

Lab Exercises:

Student should be able to demonstrate the concept of *exception handling* in Python.

Week 11:

Topics: Standard Exceptions, Creating Exceptions, Command line arguments and sys Module.

Lab Exercises:

Student should be able to demonstrate the concept of creating customized (user defined) Exceptions in Python.

Week 12:

Topics: Multithreaded Programming, Introduction, Threads and Processes, Python Threads, Thread Module, Threading Module.

Lab Exercises:

Student should be able to demonstrate how multithreading can be achieved in Python.

Week 13:

Topics: Regular Expression Operations, Using Special Characters, Regular Expression Methods, Named Groups in Python Regular Expressions, Regular Expression with glob Module.

Modules, Namespaces, Importing Modules, Importing Module Attributes, Module Built-in Functions.

Lab Exercises:

1. Student should be able to demonstrate how pattern matching can be done in python with the help of *re* module.
2. Student should be able to define a module and import a specific function in that module to another program
3. Student should be able to perform various operations on matrix.
4. Student should be able to perform various operations of Trigonometry and complex number system using the predefined methods of *math* module.

Week 14:

Topics: Packages, Difference between Python Module, Package and Library, Matplotlib package for visualization of data

Lab Exercises:

Student should be able to draw different types of 2D and 3D graphs using Matplotlib package.

Week 15:

Topics: Packages, Tkinter library for GUI application development.

Lab Exercises:

1. Student should be able to design few Graphical User Interface using *Tkinter* library.
2. Student should be able to exercise on various Image processing problems and applications related to Civil.

Books

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.

Reference Book

1. Mark Lutz, Programming Python, O'Reilly, 4th Edition, 2010

ME207ES: ENGINEERING WORKSHOP

B.Tech. I Year II Sem (Civil)

L T P C
0 0 3 1.5

Pre-requisites: Practical skill

Course Objectives:

- To Study of different hand operated power tools, uses and their demonstration.
- To gain a good basic working knowledge required for the production of various engineering products.
- To provide hands on experience about use of different engineering materials, tools, equipment and processes that are common in the engineering field.
- To develop a right attitude, team working, precision and safety at work place.
- It explains the construction, function, use and application of different working tools, equipment and machines.
- To study commonly used carpentry joints.
- To have practical exposure to various welding and joining processes.
- Identify and use marking out tools, hand tools, measuring equipment and to work to prescribed tolerances.

Course Outcomes: At the end of the course, the student will be able to:

- Study and practice on machine tools and their operations
- Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.
- Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
- Apply basic electrical engineering knowledge for house wiring practice.

TRADES FOR EXERCISES:

1. Carpentry – (T-Lap Joint, Dovetail Joint)
2. Fitting – (V-Fit & Semi-circular fit)
3. Tin-Smithy – (Square Tin & Conical Funnel)
4. House-wiring – (Parallel & Series, Two-way Switch and Tube Light)
5. Plumbing - (Series Circuit, Parallel Circuit, Reducer, Elbow)
6. Black Smithy - (Chisel, Poker)
7. Welding - (Arc Welding - Lap Joint, Butt Joint)
8. Demonstration of Power Tools (Power Hacksaw, Drilling Machine), Lathe and 3d Printing.

References:

- Engineering Workshop Laboratory Manual by Nalla Malla Reddy Engineering College

CS208ES: INFORMATION TECHNOLOGY WORKSHOP LAB (ITWS)

B.Tech. I Year II Sem (Civil, ECE)

L T P C
0 0 2 1

Course Objectives: IT Workshop is a lab course to familiarise the students about Computer Fundamentals, Hardware and usage of computer systems and various softwares.

Course Outcomes: At the end of IT Workshop Course the student should be able to

- Identify, Differentiate between, and analyse computer hardware requirements for his/her usage.
- Identify the operating systems, and different kinds of softwares installed on a computer
- Do basic Hardware and Software troubleshooting
- Connect to and Use Internet for specific requirement
- Ensure system safety by identifying possible attacks
- Secure themselves in the digital world and the Internet
- Usage of productivity tools for Document preparation, presentations, and numerical data processing.

In a week, the Lab shall have one task related to usage productivity tools apart from the hardware and systems related tasks.

List of Experiments:

1. Computer Fundamentals

Students should be able to find out the configuration of the computer currently being used and compare with configuration of another computer in the lab. The following Task has to be done by the student

Task 1:

- Identify the System Configuration and compare it with other systems having different configurations.
- List the maximum number of peripherals that you could identify in the system being used.

Usage of Productivity Tools:

- Submit a write up on the family of processors till now using Google Docs.
- List the maximum number of peripherals using Google Sheets.

2. Computer Software

Students should be able to identify all the softwares installed in the system being used. Students are expected to identify the types of those softwares -System Software and Application software.

Task 2:

- List the softwares installed in the system and mention their

types. Usage of Productivity Tools:

- List different types of Google apps available using Sheets.
- Draft a write up of one page describing the difference between system software and application software on Google Docs (tables shall be used).

3. Computer Hardware

Students need to go through the video which shows the process of assembling a PC. A video would be given as a part of course content.

Task 3:

- Identify the components of a disassembled PC.
- Identify defective hardware components in

PCs. Usage of Productivity Tools:

- List the components which were found defective on the motherboard and in CPU using Google Sheets.

4. Understanding Operating Systems

Students should be able to list down the steps involved in installing the OS. Students are expected to identify the appropriate library files according to the requirements in their core branches.

Task-4:

- Installation of any one Operating System and learn to partition the memory in different drives.
- Installation of Library files.
- List out different operating systems you have come

across Usage of Productivity Tools:

- Submit a write-up explaining the detailed steps for installation of any one OS using Google Docs.
- List the Library files using Google Sheets.

5. Hardware Troubleshooting

Students should be able to identify faults in the CPU functioning and defects in system software problems. Students should be assigned a PC which does not boot due to improper assembly or defective peripherals.

Task 5:

- Identify the problems and fix them to get the computer back to working condition.
- Identify issues in system software and

troubleshoot it. Usage of Productivity Tools:

- List the defective peripherals and note the analysis using Google Docs. Collaborate with another student and compare notes online.

6. Connecting to a Network

Students should be able to connect to the wifi network and connect to

LAN. Task-6:

- Connect your mobile to Wifi and & the given System to LAN and Configure IP Address
- Configure Email on your mobile and list out the steps in doing that
- Connect to another machine using FTP and transfer a file. Document the

process Usage of Productivity Tools:

- Design a presentation consisting above topics using Google Slides.

7. Internet Usage

Students should be able to use web browsers, bookmark websites, search on the internet. Task-7:

- Usage of different types of search engines and understand the difference. List all the search engines you could use.
- Learn about ads on internet while browsing. Change ads settings in the browser.

Usage of Productivity Tools:

- Demonstrating optimal usage of search engines using different logos and images using Google Docs.

8. System Safety

Students should be able to recognize the files corrupted due to viruses and beware unauthorized files entering into the system with file extensions. Students should be exposed to various threats on the internet such as Spam, Adware, Trojan, Viruses, Worms Phishing, Malware, Ransomware, Keyloggers, exposure of personal data, and other cyber threats.

Task-8:

- Identify different file extensions and classify them into authorized and unauthorized files types.
- Identify the files affected due to various types of cyber threats as mentioned above (One virus, one worm, one malware). (search the internet to understand this)

Usage of Productivity Tools:

- List using Google Docs the Classification of file extensions and type of viruses learnt

9. Internet Security

Students should understand how to enhance security while using internet. Task-9:

- Identify what all cookies are set in your browser / mobile.
- Configure browser to enhance security
- Learn how to block the pop ups, block active X downloads
- Identify possible Phishing attacks

Usage of Productivity Tools:

- A presentation on Internet Security to be converted to pdf and presented.

10. Security in Digital World

Students are expected to learn how to keep their system secure and safe. They must know how to get 2-Step Authentication done, how to create strong passwords. Students should learn to enhance security of their mobiles and systems.

Task 10:

- Creating strong passwords
- Applying 2-Step Authentication for their gmails
- Ensuring mobile (and other devices) security through system settings.

Usage of Productivity Tools:

- Task on Online Sharing of files using google drive, and giving specific permissions for file access.

11. LaTeX for Documentation and Presentation

Students should be able to understand an overview of LaTeX. Students must learn to Insert Images, Tables and Mathematical Formulas, create certificates etc. in their Document. Students should be able to Prepare Presentation Slides using Powerpoint. Students should learn to create and prepare presentations in LaTeX using Beamer Class. They should be able to explore the Beamer Class as it has a wide range of template designs in it.

Task-11:

The students are expected to do the following tasks.

- Prepare Report or an Article using LaTeX.
- Prepare a Certificate using LaTeX.
- A presentation on any topics from the syllabus as part of group activity using Beamer.

12. Preparing Professional Documents

Students should update themselves with the latest tools and softwares available open source for project documentation and other professional documents.

Task-12:

Students should be install these softwares and use.

- Learning Docusaurus- An open source document preparation software.
- Installing the Jupyter Software- An open source document preparation software.
- Create your website using google sites

REFERENCE BOOKS:

1. IT Workshop Laboratory Manual by Nalla Malla Reddy Engineering College
2. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech
3. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by Patrick Regan – CISCO Press, Pearson Education
4. PC Hardware - A Handbook – Kate J. Chase PHI (Microsoft)
5. Computer Networking Problems and Solutions by Russ White and Ethan Banks
6. LaTeX Companion – Leslie Lamport, PHI/Pearson.

***MC 209ES: DIGITAL WELLBEING**

B.Tech. I Year II-Sem

(Common to CSE, CSE (AIML), ECE, EEE, Mechanical, Civil)

L T P C

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Course Objectives:

To create awareness of digital wellbeing among students by educating them in various kinds of frauds, threats and attacks in digital world along with their basic counter measures.

Course Outcomes:

By the end of the course, students will be

1. Able to gain knowledge regarding cybercrimes and cyber offenses
2. Able to know how to uncover fake news and how to protect online data
3. Able to understand cyber bullying, and its countermeasures, social media management along with Digital Parenting
4. Able to gain knowledge in Digital Legal and Ethical Issues
5. Able to analyse various case studies

UNIT – I Introduction to Digital Wellbeing

Introduction to Digital Wellbeing

UNIT – II Digital Security Tools and Techniques

- a) Uncovering fake news, Is Privacy is a Myth?
- b) Consent & Data Why is it different online.
- c) Uncovering Fake News

UNIT – III Digital Safety – Physical & Psychological Wellbeing

- a) Cyber bullying,
- b) Digital Parenting,
- c) Digital Addiction,

UNIT – IV Digital Spirit – Legal and Ethical Issues

- (a) Cyber Crime against Women and Children,
- (b) Managing Negative Comments Online,
- (c) Impact of Digital Technology on Human Wellness
- (d) Social Engineering Crimes

UNIT – V Case Studies

Case Studies (Mini Cases): State of Tamil Nadu vs. Suhas Katti Case, The Slumdog Millionaire Movie Piracy case, Cyber Pornography involving a Juvenile Criminal, Pune Citibank MphasiS call Venter fraud, Swedish case of hacking and theft of trade secrets, Indian case of Cybersquatting and different varieties of Social Engineering Crimes and their modus operandi. (Or Any Case Study of Students Choice , A minimum of two case studies each 2000 word document)

Books:

1. Cyber Security : Understanding Cyber Crimes, Computer Forensics and Legal Perspectives – Nina Godbole – Sunit Belapure. Wiley India -2014.(Unit I, V)
2. Uncovering Fake News : ISBN : 978-81-946731-0-1
3. Is Privacy is a Myth? : ISBN: 978-81-946731-4-9
4. Consent & Data Why is it Different Online? :ISBN:
978-81-946731-6-3
5. Cyberbullying : ISBN:
978-81-946731-1-8
6. Digital Parenting : ISBN: 978-81-946731-7-0
7. Digital Addiction : ISBN: 978-81-946731-8-7
8. Cyber Crime Against Women and Children : ISBN : 978-81-946731-2-5
9. Managing Online Negative Comments : ISBN: 978-81-946731-5-6
10. Impact of Digital Technology on Humans : ISBN: 978-81-946731-9-4

Activities:

Students shall perform activities like conducting seminars in schools, colleges and also in neighbourhood, participate in group discussions, and other interactive programs etc. 05 hrs are allotted for these activities. A record of these activities shall be maintained towards continuous internal assessment.