MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

B.Tech. ECE I-II Course structure & Syllabus (w.e.f AY 2020-21) - MLRITM - R20

I Year II Semester

S. No.	Course Code	Course Name	Course Area	Periods per week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2020002	Engineering Mathematics-II	BS	3	1	0	4	30	70	100
2	2020008	Engineering Chemistry	BS	3	1	0	4	30	70	100
3	2020009	Communicative English	HS	2	0	0	2	30	70	100
4	2020502	Data Structures	ES	3	0	0	3	30	70	100
5	2020073	Engineering Chemistry Laboratory	BS	0	0	3	1.5	30	70	100
6	2020074	Communicative English Language Laboratory	HS	0	0	2	1	30	70	100
7	2020572	Data Structures Laboratory	ES	0	0	2	1	30	70	100
8	2020372	Engineering Workshop	ES	1	0	3	2.5	30	70	100
9	2020321	Environmental Science	*MC-I	3	0	0	0	-	-	-
		TOTAL		15	2	10	19	240	560	800

2020002: ENGINEERING MATHEMATICS-II   **L T P C**
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B.Tech. I Year II Semester
Course Objectives: To learn
- Methods of solving the differential equations of 1st and higher order.
- The applications of the differential equations to Newton's law of cooling, Natural growth and decay, etc.
- Concept of Sequence and nature of the series.
- 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
  Co 1: Identify whether the given differential equation of first order is exact or not
  Co 2: Solve higher differential equation and apply the concept of differential equation to real world problems.
  Co3: Analyse the nature of sequence and series.
  Co 4: Apply the del operator to vector and scalar valued functions.
  Co5: Evaluate the line, surface and volume integrals and converting them from one to Another.

UNIT-I: First Order and First-Degree ODE and its applications
Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay. Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

Learning outcomes:
- Identify whether the given differential equation of first order is exact or not.
- Apply the concept of differential equation to real world problems.
- Understand the conepts of linear and Non linear differential equations.
- Analyze Exact and Non Exact differential equations.
- Explain formation of differential equations, Homogeneous equations.

UNIT-II: Higher Order Linear Differential equations
Linear differential equations of second and higher order with constant coefficients, RHS term of the type e^{ax} , Sin ax, Cos ax, and x^n , $e^{ax} V(x)$, $x^n V(x)$, method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

Learning outcomes:
- Identify essential characteristics of linear differential equations with constant coefficients.
- Apply higher order DE's for solving some real world problems.
- Understand the differential equations with constant coefficients by appropriate method.
- Analyse Legendre's equation and Cauchy-Euler equation.
- Explain Method of variation of parameters.

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,logarithmic test; Cauchy's Integral test; Cauchy's root test; Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence.

Learning outcomes:
- Identify the Sequence, types of sequences.
- Apply the concept of sequence and series to real world problems.
- Understand the logical knowledge of forming the series.
- Analyzethe nature of sequence and series.
- Explain Alternating series.

UNIT-IV: Vector Differential Calculus
Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives. Solenoidal and Irrotational vectors, Scalar potential functions. Vector Identities.

Learning outcomes:
- Identify scalar and vector point functions.
- Apply Del to scalar and vector point functions.
- Understand the concepts of Solenoidal and irrotational vectors.
- Analyze the physical interpretation of Gradient, Divergence and curl.
- Explain vector identies.

UNIT-V: Vector Integral Calculus
Line integral-Work done, Surface Integrals-Flux of a vector valued function and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

Learning outcomes:
- Identify the work done in moving a particle along the path over a force field.
- Apply Greens, Stokes and Divergence theorems in evaluation of double and triple integrals.
- Understand the concepts of Line Integral.
- Analyze the Flux of a vector valued function.
- Explain Vector valued theorems to real world problems.

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, 9thEdition, Pearson, Reprint, 2002.

REFERENCES:
1.   Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishes
2.   S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

2020008: ENGINEERING CHEMISTRY

B.Tech. I Year II Semester   L T P C
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COURSE OBJECTIVES:
1. Analysis of water for its various parameters and its significance in industrial and domestic Applications.
2. Analyze microscopic chemistry in terms of atomic, molecular orbitals and Inter molecularforces.
3. Apply the electrochemical principles in batteries, understand the fundamentals of corrosion.
4. Understand the chemistry of various fuels and their combustion.
5. Analysis of major chemical reactions that are used in the synthesis of molecules

COURSE OUTCOMES :
1. To innovative methods to improve the quality of soft water for Potable and industrial purpose at cheaper cost and Evaluate the quality and utility ofsuitable water for industrial as well as domestic applications.
2. Understand the basic tenets of molecular orbital theories and different approaches to types of chemical boding.
3. Use of primary and secondary batteries in various fields such as automobiles, railways, medical devices, aircrafts and day to day life. Explain the characteristic factors of a metal and environment influencing the rate of Corrosion.
4. Determine efficiency of the fuel in terms of calorific value and combustion reactions of the fuel
5. Recognize and draw structural isomers, stereoisomers including enantiomers and diastereomers and racemicmixture. And Understand the mechanisms of major classes of organic reactions, including substitutions, eliminations and additions
6. Retrieve and critically review information on drugs, including how to synthesize them, from literature resources

Unit I:MOLECULAR STRUCTURE AND THEORIES OF BONDING

Atomic orbitals, molecular orbitals, introduction to VBT, Linear Combination of Atomic orbital's(LCAO), molecular orbital'sof diatomic molecules; Molecular orbital energylevel diagrams of N_2, O_2, CO molecules. Pi molecular orbitals of 1,3 butadiene
Crystal Field Theory (CFT): Salient Features of CFT-Crystal Fields; Splitting of transition metal ion d- orbital's in Tetrahedral, Octahedral and square planar geometries; Band structure of solids and effect
doping on conductance.

Learning Outcomes: At the end of this unit, the students will be able to
● Understand the Schrodinger wave equation to hydrogen and particle in a box.
● Explain the molecular orbital energy level diagram of different molecular species.
● Apply the band theory of solids for conductors, semiconductors and insulators.
● Analyze discuss the magnetic behavior and colour of complexes.
● Evaluate the Crystal Field theory and Splitting of d- orbital's

Unit II: **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, numerical problems on hardness of water, Potable water and its specifications, Steps involved in treatment of water, Disinfection of water by chlorination and ozonisation; boiler troubles-scales & sludges, caustic embrittlement, priming and foaming. 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.

Learning outcomes: The student will be able to
● Understand the differences between temporary and permanent hardness of water.
● Explain the principles of reverse osmosis and Ion-Exchange processes.
● Apply the drinking water with BIS and WHO standards.
● Analyze problems associated with hard water - scale and sludge.
● Evaluate the Internal and external treatment of water

Unit III:ELECTROCHEMISTRY AND CORROSION

Electro chemical cells: Electrode potential, standard electrode potential, types of electrodes; Calomel, Quinhydrone and glass electrode; Nernst equation; Electrochemical series and its applications; Numerical problems; Batteries: Primary (Dry cell) and secondary batteries (Lead-acid storage battery and Lithium ionbattery).
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: proper designing, Cathodic protection, sacrificial anode and impressed current cathodic methods; Surface coatings: Metallic coatings- Methods of coating- electroplating and Electroless plating ofnickel.

Learning outcomes: The student will be able to
● Understand the Nernst equation for calculating electrode and cell potentials.
● Explain the corrosion prevention methods and factors affecting corrosion.
● Apply the Pilling Bedworth rule for corrosion and corrosion prevention.
● Analyze the Dry and Wet corrosion and its Mechanism.
● Evaluate the Corrosion control methods.

Unit IV: STEREOCHEMISTRY, REACTION MECHANISM AND SYNTHESIS OF DRUG MOLECULES

Introduction to representation of 3-dimensional structures: Structural and stereoisomers, configurations, symmetry and chirality; Enantiomers, diastereomers, optical activity and configurational nomenclatures (D,L and R,S configurations)Confirmation analysis of n-butane.Substitution reactions: Nucleophilic substitution reactions, Mechanism of SN^1, SN^2 reactions; Electrophilic and nucleophilic addition reactions; Addition of HBr to propene; Markownikoff and anti Markownikoff's additions; Grignard additions on carbonyl compounds; Elimination reactions: Dehydro halogenation of alkylhalides; Saytzeff rule; Oxidation reactions: Oxidation of alcohols using $KMnO_4$ Reduction reactions: Reduction of carbonyl compounds using LiAlH4 ; Structure, synthesis and pharmaceutical applications of Paracetamoland Aspirin.

Learning Outcomes: At the end of this unit, the students will be able to
● Understand the 3 dimension structures of organic chemistry
● Explain the symmetry ,chirality of the organic molecule
● Apply the Markownikoff and anti Markownikoff's additions; Grignard additions .conformations of n-butane
● Analyze the reaction mechanism of different compounds.
● Evaluate thesynthesis of aspirin, paracetamol

 Unit V: Spectroscopic techniques and applications:
Principles of spectroscopy, selection rules and applications of electronic spectroscopy. and IR spectroscopy. Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift. Spin-spin splitting, Introduction to Magnetic Resonance Imaging.

 Learning Outcomes: At the end of this unit, the students will be able to
- Understand the. principles of . spectroscopy and its selection rules
- Explainthe concepts of nuclear magnetic resonance spectroscopy
- Apply the chemical shift values for the different compounds
- Analyze the different structures of organic compound
- Evaluate the vibrational and rotational spectroscopy

Text Books:
1. Physical Chemistry, by P.W. Atkins
2. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P) Ltd., New Delhi.
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.

Reference books:

1. Engineering chemistry by Ramadevi
2. Engineering chemistry by Bharathikumari
3. Engineering Chemistry by P.C.Jain & M.Jain Dhanpat Rai Publishing Company Ltd
4. Delhi.Engineering Chemistry (NPTEL Web-book) by B.L. Tembe, Kamaluddin and M.S. krishnan

2020009:Communicative English

B.Tech. I Year II Semester   **L T P C**
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Learning Objectives:

- Improve language proficiency with emphasis on Vocabulary, Grammar, Reading and Writing skills.
- Apply the theoretical and practical components of English syllabus to study academic subjects more effectively and critically.
- Analyze a variety of texts and interpret them to demonstrate in writing or speech.
- Write clearly and creatively, and adjust writing style appropriately to the content, the context, and nature of the subject.
- Develop language components to communicate effectively in formal and informal situations.

Course Outcomes:

- Use English Language effectively in spoken and written forms.
- Comprehend the given texts and respond appropriately.
- Communicate confidently in various contexts in their profession.
- Acquire basic proficiency in English including LSRW skills.
- Use prewriting techniques to develop ideas and produce multiple drafts of different types of paragraphs.
- Recognize and incorporate basic grammar, mechanics, and sentence variety in writing.

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: Common Errors: 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.
Learning Outcomes

At the end of the module, the learners will be able to

- Understand the concept of word formation, root words and their usage in English.
- know the types of sentences and analyze the sentence structure
- use articles and prepositions appropriately
- use punctuation marks correctly in writing
- understand the techniques of effective reading
- write paragraphs effectively
-

UNIT –II: Writing Skills.

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** E.g.., Letter of Complaint, Letter of Requisition, and Job Application with Resume.

Learning Outcomes

At the end of the module, the learners will be able to

- enrich their vocabulary using synonyms and antonyms
- noun, pronoun and subject verb agreement accurately
- understand the techniques of reading comprehension
- write formal letters in various context.

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

Learning Outcomes

At the end of the module, the learners will be able to

- use Prefixes and Suffixes from Foreign Languages in English
- understand the use misplaced modifiers and uses of tenses
- skim and scan the given text appropriately
- write definitions, descriptions and classifications

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.

Learning Outcomes

At the end of the module, the learners will be able to

- understand the importance of food pyramid in your daily life.
- explain the Active and passive Voice Subject Verb Agreement (Concord)
- apply the One word Substitutes in your every day vocabulary.
- analyze the Intensive and Extensive reading skills.
- evaluate the importance of Technical Report Writing, and E-mail 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.

Learning Outcomes

At the end of the module, the learners will be able to

- understand the Technical Vocabulary and their Usage.
- avoid common errors in English
- read any text using the sub skills of reading
- write technical reports using manual script format.

Prescribed Textbooks:

1. Sudarshan, N. P. and Savitha, C. (2018). English for Engineers, Cambridge University Press

2. Wren & Martin. (2017). High School English Grammar and Composition Book, S Chand Publishing

References:

1. Murphy, R. (2015). Essential Grammar in Use. Cambridge University Press.
2. Current English Grammar and Usage with Composition by R. P Sinha
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Swan, M. (2016). Practical English Usage. Oxford University Press.
5. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

2020502: DATA STRUCTURES

B.TECH: I YearIISem.   **L T P C**
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Prerequisites: A course on "Programming for Problem Solving".

Course Objectives:
- Exploring basic data structures such as stacks and queues.
- Introduces a variety of data structures such as hash tables, search trees, heaps, graphs.
- Introduces searching and sorting matching algorithms

Course Outcomes:
- Ability to select the data structures that efficiently model the information in a problem.
- Ability to assess efficiency trade-offs among different data structure implementations or combinations.
- Implement and know the application of algorithms for sorting and searching.
- Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, heaps, graphs, and AVL-trees.

UNIT - I
Introduction to Data Structures: Abstract Data Types, Linear List – Singly Linked List-Operations, Double Linked List- Operations, Circular Linked List-Operations.

UNIT – II
Stacks and Queues: Stack-Operations, Array and Linked Representations of Stacks, Stack applications, Queues-operations, Array and Linked representations, Queue Applications.

UNIT - III
Trees: Tree Terminology, Binary Trees**,** Tree Traversal methods, Binary Search Trees - Operations, AVL Trees, Height of AVL Tree, Operations, Red Black Trees- Definition and Representation and Applications, B Trees, Operations on B Tress, B+ Trees

UNIT - IV
Searching- Linear Search, Binary Search
Sorting- Bubble sort, Selection sort, Insertion sort, Merge sort, Quick sort, Heap sort.

UNIT - V
Graphs: Graph Implementation Methods. Graph Traversal Methods.
Hashing: Hash Table Representation**,** hash functions, collision resolution-separate

chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

TEXTBOOKS:
   1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson Freed, *Universities Press*.
   2. Data Structures using C – A. S. Tanenbaum, Y. Langsam, and M.J. Augenstein, *PHI/Pearson Education*.

REFERENCE BOOK:
   1. Data Structures: A Pseudocode Approach with C, 2nd Edition, R. F. Gilbergand B.A. Forouzan, Cengage Learning.

2020073 - ENGINEERING CHEMISTRY LAB

B.Tech. I Year II Semester

L T P C
0 0 3 1.5

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

- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- To determine the rate constant of reactions from concentrations as an function of time.
- 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 constant of a reaction from concentration – time relationships.
- 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 Conductometrictitrations
4. Estimation of Acetic acid by Conductometrictitrations
5. Estimation of HCl by Potentiometrictitrations
6. Estimation of Fe^{2+} by Potentiometry usingKMnO$_4$
7. Determination of rate constant of acid catalysed hydrolysis of methylacetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of R_f values. eg ortho and para nitrophenols
10. Determination of acid value of coconut oil
11. Verification of freundlich adsorption isotherm-adsorption of acetic acid oncharcoal
12. Determination of viscosity of castor oil and ground nut oil by using Ostwald"s viscometer.
13. Determination of partition coefficient of acetic acid between n-butanol and water.
14. Determination of surface tension of a give liquid using stalagmometer.

References

1. Senior practical physical chemistry, B.D. Khosla, A. Gulati and V. Garg (R.

Chand & Co.,Delhi)

2. An introduction to practical chemistry, K.K. Sharma and D. S. Sharma (Vikas publishing, N.Delhi)

3. Vogel's text book of practical organic chemistry 5thedition

4. Text book on Experiments and calculations in Engineering chemistry – S.S.Dara

2020074:Communicative English Language (CEL)Lab

B.Tech. I Year II Semester   **L T P C**
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The Communicative English Language 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.

Course Objectives:
- Facilitate computer-assisted multi-media instruction enabling individualized and independent language learning.
- Enhance English language skills, communication skills and to practice soft skills.
- Improve fluency and pronunciation intelligibility by providing an opportunity for practice in speaking.
- Train students in different interview and public speaking skills such as JAM, debate, role
- play, group discussion etc.
- Instill confidence and make them competent enough to express fluently and neutralize their mother tongue influence.

Learning Outcomes:
By the end of the course students will be able to-
- Better perception of nuances of English language through audio- visual experience.
- Neutralization of accent for intelligibility.
- Participate in group activities.
- Speaking skills with clarity and confidence which in turn enhances their employability.
- Apply effective communication skills in a variety of public and interpersonal settings

Communicative English Language Lab (CELL) shall have two parts:
a. Computer Assisted Language Learning (CALL) Lab
b. Interactive Communication Skills (ICS) Lab

Listening Skills
Objectives
a. Enable students develop their listening skills to appreciate its role in the LSRW skills approach to language and improve their pronunciation.
b. 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.
- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

Speaking Skills
Objectives
a. Involve students in speaking activities in various contexts.

b. Enable students express themselves fluently and appropriately in social and professional contexts.

- Oral practice: Just A Minute (JAM) Sessions
- Describing objects/situations/people
- Role play – Individual/Group activities
- Group Discussions
- Debate

Exercise – I
CALL Lab: *Understand:* Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening. *Practice*: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.
ICS Lab: *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.
Exercise – II
CALL 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.
ICS Lab: *Understand:* Features of Good Conversation – Non-verbal Communication. *Practice:* Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.
Exercise - III
CALL Lab: *Understand:* Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).
Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.
ICS Lab: *Understand:* How to make Formal Presentations. *Practice:* Formal Presentations.
Exercise – IV
CALL Lab: *Understand:* Listening for General Details. *Practice:* Listening Comprehension Tests.
ICS Lab: *Understand:* Public Speaking – Exposure to Structured Talks. *Practice:* Making a Short Speech – Extempore.
Exercise – V
CALL Lab: *Understand:* Listening for Specific Details. *Practice:* Listening Comprehension Tests.
ICS Lab: *Understand:* Interview Skills. *Practice:* Mock Interviews.
Reference Books:
1. Kumar, S. & Lata, P. (2011). Communication Skills. Oxford University Press.
2. Balasubramanian, T. (2008). A Text book of English Phonetics for Indian Students, Macmillan.
3. Thorpe, E. (2006). Winning at Interviews, Pearson Education.
4. Sethi, J. et al. (2005). A Practical Course in English Pronunciation (with CD), Prentice Hall of
5. Effective Technical Communication by M Ashraf Rizvi

20205572: DATA STRUCTURES LAB

B.Tech. I YearIISem.   **L T/P/D C**
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Prerequisites: A Course on "Programming for problem solving".

Course Objectives:
- It covers various concepts of C programming language
- It introduces searching and sorting algorithms
- It provides an understanding of data structures such as stacks and queues.

Course Outcomes:
- Ability to develop C programs for computing and real-life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks, queues and linked lists.
- Ability to Implement searching and sorting algorithms

LIST OF EXPERIMENTS
1. Write a program that uses functions to perform the following operations on singly linked list.:
    i) Creation   ii)Insertion   iii)Deletion   iv)Traversal
2. Write a program that uses functions to perform the following operations on doubly linked list.:
    i) Creation   ii)Insertion   iii)Deletion   iv)Traversal
3. Write a program that uses functions to perform the following operations on circular linked list.:
    i) Creation   ii)Insertion   iii)Deletion   iv)Traversal
4. Write a program that implement stack (its operations)using
    i) Arrays   ii)Pointers
5. Write a program that implement Queue (its operations)using
    i) Arrays   ii)Pointers
6. Write a program to implement the tree traversal methods.
7. Write a program that implements the following sorting methods to sort a given list of integers in ascending order
    i) Bubble sort ii)Selection sort iii) Insertion sort
8. Write a program that implements the following sorting methods to sort a given list of integers in ascending order
    i) Merge Sort ii)Quick sort   iii) Heap sort

9. Write a program that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:

       i) Linear search   ii) Binary search

10. Write a program to implement the graph traversal methods.

TEXTBOOKS:
1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson Freed, *Universities Press*.
2. Data Structures using C – A. S. Tanenbaum, Y. Langsam, and M. J.Augenstein, *PHI/Pearson Education*.

REFERENCE:
1. Data Structures: A Pseudocode Approach with C, 2nd Edition, R. F. Gilberg and B. A. Forouzan, Cengage *Learning.*

2020372: ENGINEERING WORKSHOP

B.Tech. I Year II Semester   **L T P C**
                                                                        1 0 3 2.5

COURSE OBJECT :
1. To Study of different hand operated power tools, uses and their demonstration.
2. To gain a good basic working knowledge required for the production of various engineering products.
3. To provide hands on experience about use of different engineering materials, tools, equipments and processes those are common in the engineering field.
4. To develop a right attitude, team working, precision and safety at work place.
5. It explains the construction, function, use and application of different working tools, Equipment and machines

UNIT – 1   CARPENTRY & FITTING   HOURS :4

Carpentry – Introduction, Carpentry tools, sequence of operations,Trade importance, advantages, disadvantages and applications

Fitting – Introduction, fitting tools, sequence of operations, Trade importance, advantages, disadvantages   and applications

LEARNING OUTCOME :
Student should be able to
1. Understand the trade of carpentry and fitting. (L2)
2. Explain the tools involved in manufacturing operations. (L3)
3. Evaluate the applications of carpentry and fitting. (L4)

UNIT – 2   TIN SMITHY AND BLACKSMITHY   HOURS :

Tin-Smithy – Introduction, Tin smithy tools, sequence of operations, Trade importance, advantages, disadvantages   and applications

Black smithy- Introduction, Black smithy tools, sequence of operations, Trade importance, advantages, disadvantages and applications

LEARNING OUTCOME :
Student should be able to
1. Understand the oldest manufacturing methods. (L2)
2. Describe the sequence of operations involved. (L3)
3. Explain the safety precautions and tools usage. (L4)

UNIT – 3   HOUSE WIRING AND WELDING   HOURS :4

House-wiring – Introduction, Electrical wiring tools, sequence of operations and applications (Parallel & Series, Two-way Switch and Tube Light)

Welding Practice – Introduction, electrode, welding tools, and sequence of operations, advantages and applications (Arc Welding & Gas Welding)

LEARNING OUTCOME :

Student should be able to

1. Discuss the topic of Heat engines.(L3)
2. Identify types of Heat engines cycles.(L5)
3. Evaluate the Factors affecting routing procedure, Route Sheet.(L4)

LIST OF EXPERIMENTS:

1. Carpentry
2. Fitting
3. House Wiring
4. Tin smithy
5. Black smithy
6. welding
7.Foundry

TRADES FOR DEMONSTRATION & EXPOSURE:

1.Plumbing
2. Metal Cutting (Water Plasma), Power
   Tools In Construction And
3. Wood Working

TEXT BOOK :

1. Workshop Practice /B. L. Juneja / Cengage
2. Workshop Manual / K. Venugopal / Anuradha

REFERENCE BOOK :

1. Work shop Manual – P. Kannaiah/ K. L. Narayana/ SciTech
2. Workshop Manual / Venkat Reddy/ BSP

COURSE OUTCOMES :

1. **Explain** the design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint. (L4)
2. **Demonstrate** the design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit. (L4)
3. **Understand** to make various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder. (L4)
4. **Demonstrate** the design and model various basic prototypes in the trade of Welding. (L4)
5. **Explain** to make various basic prototypes in the trade of Black smithy such as J shape, and S shape. (L4)
6. **Understand** to perform various basic House Wiring techniques such as connecting one lamp with one switch, connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring. (L4)

2020021 - ENVIRONMENTAL SCIENCE

B.Tech. I Year II Sem   L T P C
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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, Field visits.

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, Dams: benefits and problems. **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. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

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:** Municipal Solid Waste management, 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, Concepts of bioremediation. **Global Environmental Issues and Global Efforts: C**limate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI Initiatives.

UNIT-V

Environmental Policy, Legislation & EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life 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. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon lifestyle.

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, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS.Publications.