



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU (AUTONOMOUS)
Department of Civil Engineering

COURSE STRUCTURE FOR FIRST YEAR UNDER GRADUATE (B.Tech) PROGRAMME
BR23 Regulation

I B.Tech - I Semester

S.No.	Category of course	Course Code	Course Title	Hours per Week			Credits
				L	T	P	
1	HM	23HM1T01	Communicative English	2	0	0	2
2	BS	23BS1T01	Linear Algebra & Calculus	3	0	0	3
3	BS	23BS1T02	Engineering Physics	3	0	0	3
4	ES	23ES1T02	Basic Electrical & Electronics Engineering	3	0	0	3
5	ES	23ES1T04	Introduction to Programming	3	0	0	3
6	HM(Lab)	23HM1L01	Communicative English lab	0	0	2	1
7	BS(Lab)	23BS1L01	Engineering Physics Lab	0	0	2	1
8	ES(Lab)	23ES1L01	Electrical & Electronics Engineering Workshop	0	0	3	1.5
9	ES(Lab)	23ES1L04	Computer Programming Lab	0	0	3	1.5
10	BS	23BS1L04	Health & Wellness, Yoga & Sports	0	0	1	0.5
TOTAL				14	0	11	19.5

I B. Tech. - II Semester

S.No.	Category of course	Course Code	Course Title	Hours per Week			Credits
				L	T	P	
1.	BS	23BS2T01	Differential Equations & Vector Calculus	3	0	0	3
2.	BS	23BS2T04	Engineering Chemistry	3	0	0	3
3.	ES	23ES2T01	Basic Civil & Mechanical Engineering	3	0	0	3
4.	ES	23ES2T03	Engineering Graphics	1	0	4	3
5.	PC	23CE2T01	Engineering Mechanics	3	0	0	3
6.	BS(Lab)	23BS2L03	Engineering Chemistry Lab	0	0	2	1
7.	ES(Lab)	23ES2L02	Engineering Workshop	0	0	3	1.5
9.	ES(Lab)	23ES2L03	IT Workshop	0	0	2	1
10.	PC(Lab)	23CE2L01	Engineering Mechanics & Building Practices Lab	0	0	3	1.5
	BS	23BS2L05	NSS /NCC/Scouts & Guides/Community Service	0	0	1	0.5
TOTAL				13	0	15	20.5

Dr. V. Lakshmi, Professor UCEK, JNTU Kakinada. (University Nominee)	Dr. A. Murali Krishna, Professor, IIT Tirpathi	Dr. V. Ramna murthy, Professor, NIT Warangal.	Br.B.ChandraSekhar, Director (Technical), Praneeth Engg Dept, Hyderabad (Industrial Expert)	Dr.Venkateswarlu Hasti, Post Doctoral fellow, IISc Bangalore. (Alumini)
<i>CEM</i>	<i>on line</i>	<i>on line</i>	<i>on line</i>	<i>on line</i>

Prof. V. Lakshmi
 Professor of Civil Engineering
 JNTU Kakinada
 09/03/24

09/03/24

Head of the Department
 Dept. of Civil Engineering
 JNTU Kakinada

COMMUNICATIVE ENGLISH

(Common to all branches)

COURSE CODE:

23HM1T01 (CE, ME, ECE, EEE)

23HH2T01 (CSE, AIDS, AIHL, CSE(AIHL))

L	T	P	C
2	-	-	2

Introduction

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of listening, speaking, reading and writing.

Course Objectives:

The main objective of introducing this course, *communicative English*, is to facilitate effective listening, Reading, Speaking and Writing skills among the students.

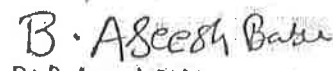
It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary.

This course helps the students to make them effective in speaking and writing skills and to make them industry-ready


A.D. Madhuri
(Charman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

LISTENING SKILLS:

Objectives:

1. To enable the students to appreciate the role of listening skill and improve their pronunciation.
2. To enable the students to comprehend the speech of people belonging to different backgrounds and regions.
3. To enable the students to listen for general content, to fill up information and for specific information.

SPEAKING SKILLS:

Objectives:

1. To make the students aware of the importance of speaking for their personal and professional communication.
2. To enable the students to express themselves fluently and accurately in social and professional success.
3. To help the students describe objects, situations and people.
4. To make the students participate in group activities like role-plays, discussions and debates.
5. To make the students participate in just a minute talks.

READING SKILLS:

Objectives:

1. To enable the students to comprehend a text through silent reading.
2. To enable the students to guess the meanings of words, messages and inferences of texts in given contexts.
3. To enable the students to skim and scan a text.
4. To enable the students to identify the topic sentence.
5. To enable the students to identify discourse features.
6. To enable the students to make intensive and extensive reading.

WRITING SKILLS:

Objectives:

1. To make the students understand that writing is an exact formal skills.
2. To enable the students to write sentences, paragraphs, e-mails and essays.
3. To make the students identify and use appropriate vocabulary.
4. To enable the students to narrate and describe.
5. To enable the students to write coherently and cohesively.


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Course Outcomes:

At the end of the Course, Student will be able to:

- CO 1: Understand the context, topic and pieces of specific information from social or transactional dialogues.
- CO 2: Apply grammatical structures to formulate sentences and correct word forms.
- CO 3: Analyze discourse markers to speak clearly on a specific topic in informal discussions.
- CO 4: Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
- CO 5: Create a coherent paragraph, essay, and resume.

Methodology:

1. The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT -I

Lesson: HUMAN VALUES: Gift of Magi (Short Story)

- Listening: Identifying the topic, the context and specific pieces of information by listening to short audio texts and answering a series of questions.
- Speaking: Asking and answering general questions on familiar topics such as home, family, work, studies and interests; Introducing oneself and others.
- Reading: Skimming to get the main idea of a text; scanning to look for specific pieces of information.
- Writing: Mechanics of Writing-Capitalization, Spellings, Punctuation-Parts of Sentences.
- Grammar: Parts of Speech, Basic Sentence Structures-forming questions
- Vocabulary: Synonyms, Antonyms, Affixes (Prefixes/Suffixes), Root words.

UNIT -II

Lesson: NATURE: The Brook by Alfred Tennyson (Poem)

- Listening: Answering a series of questions about main ideas and supporting ideas after listening to audio texts.
- Speaking: Discussion in pairs/small groups on specific topics followed by short structured talks.

Reading: Identifying sequence of ideas; recognizing verbal techniques that help to link the Ideas in a paragraph together.
Writing: Structure of a paragraph - Paragraph writing (specific topics)
Grammar: Cohesive devices -linkers, use of articles and zero article; prepositions.
Vocabulary: Homonyms, Homophones, Homographs.

UNIT -III

Lesson: BIOGRAPHY: Elon Musk

Listening: Listening for global comprehension and summarizing what is listened to.
Speaking: Discussing specific topics in pairs or small groups and reporting what is discussed
Reading: Reading a text in detail by making basic inferences-recognizing and interpreting specific context clues; strategies to use text clues for comprehension.
Writing: Summarizing, Note-making, paraphrasing
Grammar: Verbs - tenses; subject-verb agreement;
Vocabulary: Compound words, Collocations

UNIT -IV

Lesson: INSPIRATION: The Toys of Peace by Sakl

Listening: Making predictions while listening to conversations/ transactional dialogues without video; listening with video.
Speaking: Role plays for practice of conversational English in academic contexts (formal and informal) - asking for and giving information/directions.
Reading: Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships, and communicate processes or display complicated
Writing: Letter Writing: Official Letters, Resumes
Grammar: Reporting verbs, Direct & Indirect speech, Active & Passive Voice
Vocabulary: Words often confused

UNIT -V

Lesson: MOTIVATION: The Power of Intrapersonal Communication (An Essay)

Listening: Identifying key terms, understanding concepts and answering a series of relevant questions that test comprehension.
Speaking: Formal oral presentations on topics from academic contexts
Reading: Reading comprehension.
Writing: Writing structured essays on specific topics.
Grammar: Editing short texts -identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject verb agreement)
Vocabulary: Technical Jargons
Textbooks:

1. Pathfinder: Communicative English for Undergraduate Students, 1st Edition, Orient Black Swan, 2023 (Units 1,2 & 3)

2. Empowering English by Cengage Publications, 2023 (Units 4 & 5)

Reference Books:

1. Dubey, Sham Ji & Co. English for Engineers, Vikas Publishers, 2020
2. Bailey, Stephen. Academic writing: A Handbook for International Students. Routledge, 2014.
3. Murphy, Raymond. English Grammar in Use, Fourth Edition, Cambridge University Press, 2019.
4. Lewis, Norman. Word Power Made Easy- The Complete Handbook for Building a Superior Vocabulary. Anchor, 2014.

Web Resources:

GRAMMAR:

1. www.bbc.co.uk/learningenglish
2. <https://dictionary.cambridge.org/grammar/british-grammar/>
3. www.eslpod.com/index.html
4. <https://www.learngrammar.net/>
5. <https://english4today.com/english-grammar-online-with-quizzes/>
6. <https://www.talkenglish.com/grammar/grammar.aspx>

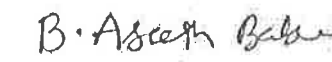
VOCABULARY

1. <https://www.youtube.com/c/DailyVideoVocabulary/videos>
2. https://www.youtube.com/channel/UC4cmBAit8i_NJZE8qK8sfpA


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I B.TECH.I SEMESTER

LINEAR ALGEBRA AND CALCULUS

Course Code: 23BS1T01

(for all).

L	T	P	C
3	0	0	3

Course Objectives:

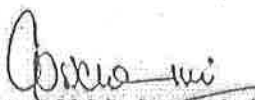
- To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

Course Outcomes:

At the end of the course, the student will be able to

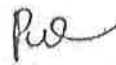
- CO1: Develop and use of matrix algebra techniques that are needed by engineers for practical applications.
- CO2: Utilize mean value theorems to real life problems.
- CO3: Familiarize with functions of several variables which is useful in optimization.
- CO4: Learn important tools of calculus in higher dimensions.
- CO5: Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.


A.D. Madhuri
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Dr. G.V.S.R. Deekshitulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

UNIT I:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form. Finding two Non Singular matrices when PAQ is in Normal form. Cauchy-Binet formulae (without proof). Inverse of Non-singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method, Electrical Circuits (Application).

UNIT II:- Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, 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:- Calculus

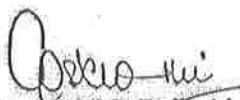
Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems on the above theorems.

UNIT IV:- Partial differentiation and Applications (Multi variable calculus)

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.



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8

UNIT V:- Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals)

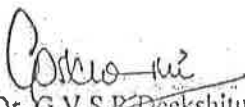
Textbooks:-

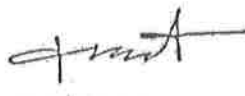
1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

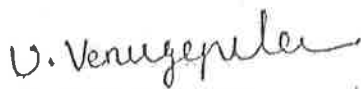
Reference Books:-

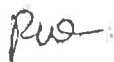
1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Micheael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)


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Mr. P. Ganga Raju
(Member, BOS)

(9)

ENGINEERING PHYSICS
(Common for all branches of Engineering)

Course Objectives:

To bridge the gap between the Physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc., enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

Course Outcomes:

- Analyse the intensity variation of light due to polarization, interference and diffraction.
- Familiarize with the basics of crystals and their structures.
- Summarize various types of polarization of dielectrics and classify the magnetic materials.
- Explain fundamentals of quantum mechanics and apply to one dimensional motion of particles.
- Identify the type of semiconductor using Hall Effect.

UNIT I Wave Optics

8hrs

Interference: Introduction - Principle of superposition - Interference of light - Interference in thin films (Reflection Geometry) & applications - Colors in thin films - Newton's Rings - Determination of wavelength and refractive index.

Diffraction & Polarisation:

Diffraction: Introduction - Fresnel and Fraunhofer diffractions - Fraunhofer diffraction due to single slit, double slit & N-slits (Qualitative) - Diffraction Grating - Dispersive power and resolving power of Grating (Qualitative).

Polarization: Introduction - Types of polarization - Polarization by reflection, refraction and Double refraction - Nicol's Prism - Half wave and Quarter wave plates

UNIT II Crystallography and X-ray diffraction

8hrs

Crystallography: Space lattice, Basis, Unit Cell and lattice parameters - Bravais Lattices - crystal systems (3D) - coordination number - packing fraction of SC, BCC & FCC - Miller indices - separation between successive (hkl) planes.

X-ray diffraction: Bragg's law - X-ray Diffractometer - crystal structure determination by Laue's and powder methods.

A.D. Madhuri
(Chairperson -BOS)

K. Mohan Kant
Dr. K.Mohan kant
(Subject Expert)

Dr.G.Padmaja Rani
(University Nominee)

Mr. S.T.Naidu
(Member, BOS)

Dr.T.N.K.V Prasad
(Subject Expert)

UNIT III Dielectric and Magnetic Materials

Dielectric Materials: Introduction - Dielectric polarization - Dielectric polarizability, Susceptibility, Dielectric constant and Displacement Vector - Relation between the electric vectors - Types of polarizations- Electronic (Quantitative), Ionic (Quantitative) and Orientation polarizations (Qualitative) - Lorentz internal field - Clausius- Mossotti equation- complex dielectric constant - Frequency dependence of polarization - dielectric loss

Magnetic Materials: Introduction - Magnetic dipole moment - Magnetization-Magnetic susceptibility and permeability - Atomic origin of magnetism - Classification of magnetic materials: Dia, para, Ferro, anti-ferro & Ferri magnetic materials - Domain concept of Ferromagnetism & Domain walls (Qualitative) - Hysteresis - soft and hard magnetic materials.

UNIT IV Quantum Mechanics and Free electron theory

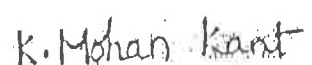
7hrs

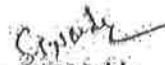
Quantum Mechanics: Dual nature of matter - Heisenberg's Uncertainty Principle - Significance and properties of wave function - Schrodinger's time Independent and dependent wave equations- Particle in a one-dimensional infinite potential well.
Free Electron Theory: Classical free electron theory (Qualitative with discussion of merits and demerits) - Quantum free electron theory - electrical conductivity based on quantum free electron theory - Fermi-Dirac distribution - Density of states - Fermi energy.


 A.D. Madhuri
 (Chairperson -BOS)


 Dr. G. Padmaja Rani
 (University Nominee)


 Dr. T.N.K.V. Prasad
 (Subject Expert)


 Dr. K. Mohan Kant
 (Subject Expert)


 Mr. S.T. Naidu
 (Member, BOS)

UNIT V Semiconductors:

Semiconductors: Formation of energy bands- classification of crystalline solids - Intrinsic semiconductors: Density of charge carriers - Electrical conductivity - Fermi level - Extrinsic semiconductors - density of charge carriers - dependence of Fermi energy on carrier concentration and temperature - Drift and diffusion currents - Einstein's equation - Hall effect and its applications.

Textbooks:

1. A Text book of Engineering Physics - M. N. Avadhanulu, P.G.Kshirsagar & TVS Arun Murthy, S.Chand Publications, 11th Edition 2019, P.K.Palanasami.
2. Engineering Physics - D.K.Bhattacharya and Poonam Tandon, Oxford press (2015).

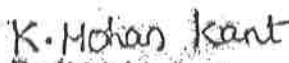
Reference Books:

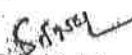
1. Engineering Physics - B.K. Pandey and S. Chaturvedi, Cengage Learning
2. Engineering Physics - Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics - Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press.
4. Engineering Physics - M.R. Srinivasan, New Age International publishers (2009).


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K.Mohan Kant
Dr. K.Mohan Kant
(Subject Expert)


Mr. S.T.Naidu
(Member, BOS)

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(9)

(Common to all branches of engineering)

Subject Code: 23ES1T02

~~Subject Code: 23ES2T02~~

Course Objectives

To expose to the field of Electrical & Electronics Engineering, laws and principles of electrical/electronic engineering and to acquire fundamental knowledge in the relevant field.

Course Outcomes: After the completion of the course students will be able to

- Understand the basic electrical circuits, AC machines.
- Analyze different electrical circuits, performance of AC machines.
- Explain the theory, construction, and operation of electronic devices.
- Apply the concept of science and mathematics to explain the working of diodes, transistors, and their applications.
- Analyze different number systems and logic gates.

PART A: BASIC ELECTRICAL ENGINEERING

UNIT I DC & AC Circuits

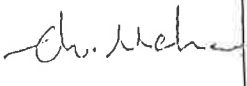
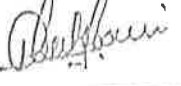
DC Circuits: Electrical circuit elements (R, L and C), Ohm's Law and its limitations, KCL & KVL, series, parallel, series-parallel circuits, Super Position theorem, Simple numerical problems.

AC Circuits: A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor (for sine wave), Voltage and current relationship with phasor diagrams in R, L, and C circuits, Concept of Impedance, Active power, reactive power and apparent power, Concept of power factor (Simple Numerical problems).

UNIT II Machines and Measuring Instruments

Machines: Construction, principle and operation of (i) Single Phase Transformer, (ii) Three Phase Induction Motor and (iii) Alternator, Applications of electrical machines.

Measuring Instruments: Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments and Wheat Stone bridge

					
Dr. S. Srikanth Professor & HOD	Dr. T. Murali Mohan, University Nominee	Dr. K. Siva Kumar Subject expert	Dr. G. Siva Kumar Subject expert	Ch. Mahadev Kumar Representative from Industry	D. Lakshman Kumar Alumni Member

PART B: BASIC ELECTRONICS ENGINEERING

UNIT I Semiconductor Devices

Introduction - Characteristics of PN Junction Diode - Zener Diode and its Characteristics. Bipolar Junction Transistor - CB, CE, CC Configurations and Characteristics.

UNIT II Basic Electronic Circuits And Instrumentation

Rectifiers and power supplies: Block diagram description of a dc power supply, working of a full wave bridge rectifier, capacitor filter (no analysis), RC Coupled amplifier.

Electronic Instrumentation: Block diagram of an electronic instrumentation system.

UNIT III Digital Electronics

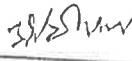
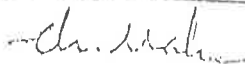
Overview of binary number system, BCD codes, Excess-3 code. Boolean Algebra, Basic Theorems and properties of Boolean Algebra, Truth Tables and simple Logic Gates including Universal Gates - AND, OR, NOT, NOR, NAND, XOR and XNOR. Simple combinational circuits - Half and Full Adders.

Textbooks:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. Switching Theory and Logic Design by A. Anand Kumar, PHI Learning, 3rd Edition.

Reference Books:

1. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
2. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
3. R. T. Paynter, Introductory Electronic Devices & Circuits - Conventional Flow Version, Pearson Education, 2009.

o.	Members	Name & Institution	Signature of member
	Chairman	Dr. S. Srikanth, Professor & HOD	
	University Nominee	Dr. T. Murali Mohan, Professor, Dept. of EEE, UCEK, JNTU Kakinada	
	Subject expert from outside the college	Dr. K. Siva Kumar, Professor, Dept. of EE, IIT Hyderabad	
	Subject expert from outside the college	Dr. G. Siva Kumar, Asst. professor, Dept. of EE, NIT Warangal	
	Representative from Industry	Ch. Mahadev Kumar, Dy. Manager Oil rigs BHEL, R C Puram Hyderabad	
	Alumni Member	D. Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

UNIT III Energy Resources, Electricity Bill & Safety Measures

Energy Resources: Conventional and non-conventional energy resources; Layout and operation of various Power Generation systems: Hydel & Solar power generation.

Electricity bill: Power rating of household appliances including air conditioners, PCs, Laptops, Printers, etc. Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers.

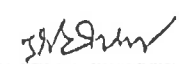
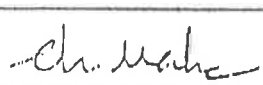
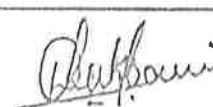
Equipment Safety Measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits. Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.

Textbooks:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

Reference Books:

1. Principles of Power Systems by V.K. Mehtha, S.Chand Technical Publishers, 2020.
2. A textbook of Electrical Technology by B.L. Theraja, S. Chand and Company, reprint edition, 2014.
3. S. K. Bhattacharya, Basic Electrical and Electronics Engineering, Second Edition, Person Publications, 2018.

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srlkanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kakinada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar , Dy. Manager Oil rigs BHEL , R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

I Year - I Semester	Code: 23ESIT04	L	T	P	C
		3	0	0	3
INTRODUCTION TO PROGRAMMING (Common to All branches of Engineering)					
Course Objectives:					
- To introduce students to the fundamentals of computer programming. - To provide hands-on experience with coding and debugging. - To foster logical thinking and problem-solving skills using programming. - To familiarize students with programming concepts such as data types, control structures, functions, and arrays. - To encourage collaborative learning and teamwork in coding projects.					
Course Outcomes:					
A student after completion of the course will be able to					
CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking.					
CO2: Analyze a problem and develop an algorithm to solve it.					
CO3: Implement various algorithms using the C programming language.					
CO4: Understand more advanced features of C language.					
CO5: Develop problem-solving skills and the ability to debug and optimize the code					
UNIT-I: Introduction to Programming and Problem Solving: Computer System: History of Computers, Introduction to Components of Computer System, compilation and execution, Program Counter Basics of a Computer Program-. Programming Languages and History of C, Basics Structure of a Computer Program, Software Development Process: Characteristics Algorithm, Flowchart, Pseudo Code, Header file, Errors in compilation time, Primitive Data Types, Formatted I/O's, Format Modifiers. Variable Rules, Keywords, Constants, String and Operators. Type Conversions, Priority Table Problemsolving strategies: Top-down and Bottom-up approach, Time and space complexities.					
UNIT-II: Control Structures (Flow of Controls):					
Decision Branching Statement (Selection): Two-way selection: if, if-else, nested if					
Multi-way selection: switch, else-if ladder					
Decision Looping Statement (Repetition/Iterative): while (Pretest/Condition-Controlled Loops) and do-while (Post test) Loops, for loop (Counter Controlled) and Unconditional statements, Nested Loops					
UNIT-III Arrays & Pointers:					
Arrays: Arrays definition and indexing, Types of Arrays					
One-Dimensional Arrays: Initialization, declaration and accessing, input and output of array					
Two-Dimensional Arrays: Initialization, declaration, accessing, input and output of array					
Case Study: Matrices, Larger Dimensional Arrays					
Pointers: Concept of a pointer, Initialization of pointer variables and access, Pointer dereferencing and address operators, array manipulation using pointers, Dynamic Memory Management functions, pointers to pointers, command line arguments					

H.R. K.	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT-IV: Functions & Strings:

Functions: Definition of Function, Categorization of User define functions, Local, Global variables and Actual and Formal parameters, Scope life time variables, pass by value and reference, Recursive function Case Study: Factorial, Fibonacci Series, Basics of Sorting/and Searching

Strings: Introduction to String, String Handling Functions

UNIT-V: User Defined Data Types & File Handling:

User Defined Data Types: Structures: declaration, Initialization, accessing, nested structures, self-referential structure, structures to array, pointer and functions, Union, typedef and enum

File Handling: Basics of File Handling (only if time is available, otherwise should be done as part of the lab).

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, Second Edition 2015.
2. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill, Second Edition.
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1. Computing fundamentals and C Programming, E Balagurusamy, McGraw- Hill Education.
2. Programming in C, Rema Theraja, Oxford, 2016, 2nd edition
3. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage
4. C Programming- A Beginners Guide by Prof. Mangesh, Dr. D R Shashirag, Prof. Bodapati Narasimha Rao, Prof. B P N Madhu Kumar.

<i>H. R. K. K.</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>Prof. B S N Murthy</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy, Professor of CSE, BVCEC.

Department of CSE
University College of Engg.
JNTUK Kakinada.

BR23 - I I CIV - (6)

(3)

23HM1201 ✓

COMMUNICATIVE ENGLISH LAB

(Common to all branches)

COURSE CODE :-

23HS1201 (CE, ME, ECE, EEE)

23HS2201 (CSE, AID, AIML, CSE (AI/ML))

L T P C
2 1

OBJECTIVES

The main objective of introducing this course, *Communicative English Laboratory*, is to expose the students to a variety of self-instructional, learner friendly modes of language learning students will get trained in the basic communication skills and also make them ready to face job interviews.

OUT COMES

CO 1: Understand the different aspects of the English language proficiency with emphasis on LSRW skills.

CO 2: Apply communication skills through various language learning activities.

CO3: Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.

CO4: Evaluate and exhibit professionalism in participating in debates and group discussions.

CO5: Create effective resonance and prepare themselves to face interviews in future.

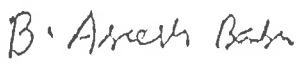
List of Topics:

1. Vowels & Consonants
2. Neutralization/Accent Rules
3. Communication Skills & JAM
4. Role Play or Conversational Practice
5. E-mail Writing
6. Resume Writing, Cover letter, SOP
7. Group Discussions-methods & practice
8. Debates- Methods & Practice
9. PPT Presentations/ Poster Presentation
10. Interview Skills


A.D. Mahuri
(Chairman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

Lab Software: Globarena Technologies Ltd.,

Reference Books:

1. Meenakshi Raman, Sangeeta-Sharma. Technical Communication. Oxford Press.2018.
2. Grant Taylor; English Conversation Practice, Tata McGraw-Hill Education India, 2016
3. Hewling's, Martin, Cambridge Academic English (B2). CUP, 2012.
4. T.Balasubramanyam, A Textbook of English Phonetics for Indian Students, (3rd Ed) Trinity Press.

Web Resources:

Spoken English:

1. www.esl-lab.com
2. www.englishmedialab.com
3. www.englishinteractive.net
4. <https://www.britishcouncil.in/english/online>
5. <http://www.letstalkpodcast.com/>
6. https://www.youtube.com/c/mmmEnglish_Emma/featured
7. <https://www.youtube.com/c/ArnelsEverydayEnglish/featured>
8. <https://www.youtube.com/c/engvidAdam/featured>
9. <https://www.youtube.com/c/EnglishClass101/featured>
10. <https://www.youtube.com/c/SpeakEnglishWithTiffani/playlists>
11. https://www.youtube.com/channel/UCV1h_cBE0Drdx19qkTMOWNw

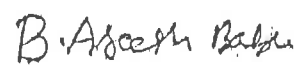
Voice & Accent:

1. <https://www.youtube.com/user/letstalkaccent/videos>
2. <https://www.youtube.com/c/EngLanguageClub/featured>
3. https://www.youtube.com/channel/UC_OskgZBoS4dAnVUgJVexc
4. https://www.youtube.com/channel/UCNfm92h83W212ljc5Xwp_1A


A.D. Madhuri
(Charman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

ENGINEERING PHYSICS LAB
(Common to All Branches of Engineering)

Course Objectives:

To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes: The students will be able to

- Operate optical instruments like travelling microscope and spectrometer.
- Estimate the wavelengths of different colors using diffraction grating.
- Plot the intensity of the magnetic field of circular coil carrying current with distance.
- Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively.
- Calculate the band gap of a given semiconductor
- Identify the type of semiconductor using Hall Effect.
- Identify the different types of semiconductor diodes and their applications.
- Analyse the experimental data on Planck's constant and compare it to theoretical predictions.

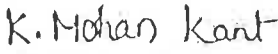
List of Experiments:

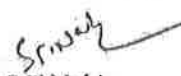
1. Determination of radius of curvature of a given planoconvex lens by Newton's rings.
2. Determination of wavelengths of different spectral lines in mercury spectrum using diffraction grating in normal incidence configuration.
3. Verification of Brewster's law
4. Determination of dielectric constant using charging and discharging method.
5. Study the variation of B versus H by magnetizing the magnetic material (B-H curve).
6. Determination of wavelength of Laser light using diffraction grating.
7. Estimation of Planck's constant using photoelectric effect.
8. Determination of the resistivity of semiconductors by four probe methods.
9. Determination of energy gap of a semiconductor using p-n junction diode.
10. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.


Ms. A.D. Madhuri
(Chairperson - BOS)


Dr. G. Padmaja Rani
(University Nominee)


Dr. T.N.K.V. Prasad
(Subject Expert)


Dr. K. Mohan Kant
(Subject Expert)


Mr. S.T. Naidu
(Member, BOS)

BR23 I I - CIV - (8)

L T P C
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ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

(4)

(Common to All branches of Engineering)

Subject Code: 23ES1L01

Subject Code: 23ES2L01

Course Objectives:

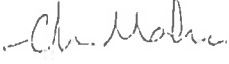
- To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.
- To impart knowledge on the principles of digital electronics and fundamentals of electron devices.

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

- Get an exposure to common electrical & electronic components and their ratings.
- Understand the usage of common electrical & electronic measuring instruments.
- Understand the basic characteristics of electrical machines and perform energy calculations.
- Plot and discuss the characteristics of various electron devices.
- Explain the operation of a digital circuit.

Activities:

- Familiarization of commonly used Electrical & Electronic Workshop Tools: Bread board, Solder, cables, relays, switches, connectors, fuses, Cutter, plier, screwdriver set, wirestripper, flux, knife/blade, soldering iron, de-soldering pump etc.
Provide some exercises so that hardware tools and instruments are learned to be used by the students.
- Familiarization of Measuring Instruments like Voltmeters, Ammeters, multimeter, LCR-Q meter, Power Supplies, CRO, DSO, Function Generator, Frequency counter.
Provide some exercises so that measuring instruments are learned to be used by the students.
- Components:
 - Familiarization/Identification of components (Resistors, Capacitors, Inductors, Diodes, transistors, IC's etc.) - Functionality, type, size, colour coding package, symbol, cost etc.
 - Testing of components like Resistor, Capacitor, Diode, Transistor, ICs etc. - Compare values of components like resistors, inductors, capacitors etc with the measured values by using instrument.

					
Dr. S. Srikanth Professor & HOD	Dr. T. Murali Mohan, University Nominee	Dr. K. Siva Kumar Subject expert	Dr. G. Siva Kumar Subject expert	Ch. Mahadev Kumar Representative from Industry	D. Lakshman Kumar Alumni Member

(21)

PART A: BASIC ELECTRICAL ENGINEERING LAB

List of experiments:

(Any 5 of the following experiments are to be conducted)

1. Verification of KCL and KVL
2. Verification of Superposition theorem
3. Measurement of Resistance using Wheat stone bridge
4. O.C & S.C Characteristics of Single Phase Transformer
5. Measurement of Power and Power factor using Single-phase wattmeter
6. Measurement of Earth Resistance using Megger
7. Calculation of Electrical Energy for Domestic Premises

References:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

PART B: BASIC ELECTRONICS ENGINEERING LAB

List of Experiments:

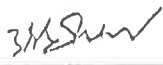
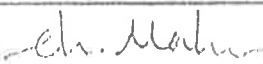
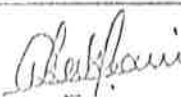
(Any 5 of the following experiments are to be conducted)

1. Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.
2. Plot V – I characteristics of Zener Diode and its application as voltage Regulator.
3. Implementation of half wave with and without filter.
4. Implementation of full wave rectifier with and without filter.
5. Plot Input & Output characteristics of BJT in CE configuration.
6. Plot Input & Output characteristics of BJT in CB configuration.
7. Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs.

Tools / Equipment Required: DC Power supplies, Multi meters, DC Ammeters, DC Voltmeters, AC Voltmeters, CROs, all the required active devices.

References:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srikanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kaklnada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar ,Dy. Manager Oil figs BHEL , R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

I Year - I Semester	Code: 23ES1L04	L	T	P	C
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COMPUTER PROGRAMMING LAB
(Common to All branches)

Course Objectives:

The course aims to give students hands – on experience and train them on the concepts of the C programming language.

Course Outcomes:

CO1: Read, understand, and trace the execution of programs written in C language.

CO2: Select the right control structure for solving the problem.

CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers.

CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.

UNIT I

WEEK 1:

Objective: Getting familiar with the programming environment on the computer and writing the first program.

Suggested Experiments/Activities:

Tutorial 1: Problem-solving using Computers.

Lab 1: Familiarization with programming environment

- Basic Linux environment and its editors like Vi, Vim & Emacs etc.
- Exposure to Turbo C, gcc
- Writing simple programs using printf(), scanf()

WEEK 2:

Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation.

Suggested Experiments /Activities:

Tutorial 2: Problem-solving using Algorithms and Flow charts.

Lab 2: Converting algorithms/flow charts into C Source code.

Developing the algorithms/flowcharts for the following sample programs

- Sum and average of 3 numbers
- Conversion of Fahrenheit to Celsius and vice versa
- Simple interest calculation

WEEK 3:

Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants.

Suggested Experiments/Activities:

Tutorial 3: Variable types and type conversions:

Lab 3: Simple computational problems using arithmetic expressions.

- Finding the square root of a given number
- Finding compound interest
- Area of a triangle using heron's formulae
- Distance travelled by an object

N.R. no	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, NTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor of CSE					

UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial 4: Operators and the precedence and as associativity:

Lab4: Simple computational problems using the operator' precedence and associativity

- Evaluate the following expressions.
 - $A+B*C+(D*E) + F*G$
 - $A/B*C-B+A*D/3$
 - $A+++B---A$
 - $J=(i++) + (++i)$
- Find the maximum of three numbers using conditional operator
- Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5:

Objective: Explore the full scope of different variants of "if construct" namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

- Write a C program to find the max and min of four numbers using if-else.
- Write a C program to generate electricity bill.
- Find the roots of the quadratic equation.
- Write a C program to simulate a calculator using switch case.
- Write a C program to find the given year is a leap year or not.

WEEK 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

- Find the factorial of given number using any loop.
- Find the given number is a prime or not.
- Compute sine and cos series
- Checking a number palindrome
- Construct a pyramid of numbers.

<i>N. Rao</i>	online	online	online	online	<i>Dr. B S N</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIMI), CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- Find the min and max of a 1-D integer array.
- Perform linear search on 1D array.
- The reverse of a 1D integer array
- Find 2's complement of the given binary number.
- Eliminate duplicate elements in an array.

WEEK 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting

Lab 8: Matrix problems, String operations, Bubble sort

- Addition of two matrices
- Multiplication two matrices
- Sort array elements using bubble sort

WEEK 9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 9: Pointers and dynamic memory allocation

Lab 9: Pointers and memory dereference.

- Write a C program to find the sum of a 1D array using malloc ()
- Enter n students data using calloc () and display failed students list
- Write a C program to implement realloc ()

Dr. Ravi	Online	Online	Online	Online	Online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT IV

WEEK 10:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

Tutorial 10: Functions, call by value, scope and extent,

Lab 10: Simple functions using call by value, solving differential equations using Euler's theorem.

- Concatenate two strings without built-in functions
- Reverse a string using built-in and without built-in string functions
- Write a C function to find the length of a string.
- Write a C function to transpose of a matrix.
- Write a C function to demonstrate numerical integration of differential equations using Euler's method

WEEK 11:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions.

Suggested Experiments/Activities:

Tutorial 11: Recursion, recursive calls

Lab 11: Recursive functions

- Write a recursive function to generate Fibonacci series.
- Write a recursive function to find the lcm of two numbers.
- Write a recursive function to find the factorial of a number.
- Write a C Program to implement Ackermann function using recursion.
- Write a recursive function to find the sum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 12: Call by reference, dangling pointers

Lab 12: Simple functions using Call by reference, Dangling pointers.

- Write a C program to swap two numbers using call by reference.
- Demonstrate Dangling pointer problem using a C program.
- Write a C program to copy one string into another using pointer.
- Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

N. R. Rao	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada. Professor Department of CSE	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AI/ML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT V

WEEK 13:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 13: Structure, Bitfields, Self-Referential Structures, Linked lists

Lab 13: Structure, Self-Referential Structures, Bitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields

- Write a C program to find the total, average of n students using structures
- Read student name and marks from the command line and display the student details along with the total.
- Create and display a singly linked list using self-referential structure.
- Demonstrate the differences between structures and unions using a C program.
- Write a C program to shift/rotate using bitfields.
- Write a C program to copy one structure variable to another structure of the same type.

WEEK 14:

Objective: To understand data files and file handling with various file I/O functions.

Explore the differences between text and binary files.

Suggested Experiments/Activities:

Tutorial 14: File handling

Lab 14: File operations

- Write a C program to write and read text into a file.
- Write a C program to write and read text into a binary file using fread() and fwrite()
- Copy the contents of one file to another file.
- Write a C program to merge two files into the third file using command-line arguments.
- Find no. of lines, words and characters in a file
- Write a C program to print last n characters of a given file.

Text Books:

- Programming in C - A practical approach by Ajay Mittal, Pearson Education, First Edition.
- Schaum's Outline of Programming with C by Byron S. Gottfried, McGraw Hill, Second Edition.

Reference Books:

- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India
- C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

N. R. K.	online	online	online	online	online
Dr. N. Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy, Professor of CSE, BVCEC.

Department of CSE
JNTUK Kakinada.

BR23-I-I-CIV-10

L	T	P	C
0	0	1	0.5

HEALTH AND WELLNESS, YOGA AND SPORTS

(Common to All branches of Engineering)

3

~~23BS1L04(C.E, EEE, MEC, ECE)~~

~~23BS2L04((CSE, AIDS, AIML, CSE(AIML))~~

Course Objectives:

The main objective of introducing this course is to make the students maintain their mental and physical wellness by balancing emotions in their life. It mainly enhances the essential traits required for the development of the personality.

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

- CO1: Understand the importance of yoga and sports for Physical fitness and sound health.
- CO2: Demonstrate an understanding of health-related fitness components.
- CO3: Compare and contrast various activities that help enhance their health.
- CO4: Assess current personal fitness levels.
- CO5: Develop Positive Personality

UNIT I

Concept of health and fitness, Nutrition and Balanced diet, basic concept of Immunity Relationship between diet and fitness, Globalization and its impact on health, Body Mass Index(BMI) of all age groups.

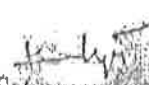
Activities:

- I) Organizing health awareness programmes in community
- II) Preparation of health profile
- III) Preparation of chart for balance diet for all age groups


Mrs. A.D. Madhuri
(Chairperson - BOS)

Dr. G. Shyam Kumar
(University Nominee)


T. Durg Rao
(M.P. Ed)


K. Sathyanarayana
(U.P. Ed)

Reference Books:

1. Gordon Edlin, Eric Golanty. Health and Wellness, 14th Edn. Jones & Bartlett Learning, 2022
2. T.K.V. Desikachar. The Heart of Yoga: Developing a Personal Practice
3. Archie J. Bahm. Yoga Sutras of Patanjali, Jain Publishing Company, 1993
4. Wiseman, John Lofty, SAS Survival Handbook: The Ultimate Guide to Surviving Anywhere Third Edition, William Morrow Paperbacks, 2014
5. The Sports Rules Book/ Human Kinetics with Thomas Hanlon. ~ 3rd ed. Humankinetics, Inc. 2014

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities of Health/Sports/Yoga.
2. Institutes must provide field/facility and offer the minimum of five choices of as many as Games/Sports.
3. Institutes are required to provide sports instructor / yoga teacher to mentor the students.

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.

Mrs. A.D. Madhuri
(Chairperson - BOS)

Dr. G. Shyam Kumar
(University Nominee)

T. Durga Rao
(M.P. Ed)

K. Sanyanarayana
(B.P. Ed)

UNIT II

Concept of yoga, need for and importance of yoga, origin and history of yoga in Indian context, classification of yoga, Physiological effects of Asanas- Pranayama and meditation, stress management and yoga, Mental health and yoga practice.

Activities:

Yoga practices - Asana, Kriya, Mudra, Bandha, Dhyana, Surya Namaskar

UNIT III

Concept of Sports and fitness, importance, fitness components, history of sports, Ancient and Modern Olympics, Asian games and Commonwealth games.

Activities:

- 1) Participation in one major game and one individual sport viz., Athletics, Volleyball, Basketball, Handball, Football, Badminton, Kabaddi, Kho-kho, Table tennis, Cricket etc.
Practicing general and specific warm up, aerobics
- 10) Practicing cardiorespiratory fitness, treadmill, run test, 9 min walk, skipping and running.


Mr. A. D. Madhavi
(Chairperson - BOS)

Dr. G. Sivan Kumar
(University Nominee)

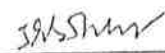
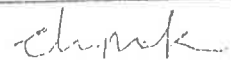

P. Durga Rao
(M. P. Ed.)


K. Satyanarayana
(M. P. Ed.)

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE (A)
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
Course structure for the A.Y 2023-2024 (BR23Regulations)

I B.Tech. - I Semester

S.No.	Course Code	Category of course	Subjects	L	T	P	C
1	23HM1T01	HM	Communicative English	2	0	0	2
2	23BS1T01	BS	Linear Algebra & Calculus	3	0	0	3
3	23BS1T02	BS	Engineering Physics	3	0	0	3
4	23ES1T02	ES	Basic Electrical & Electronics Engineering	3	0	0	3
5	23ES1T04	ES	Introduction to Programming	3	0	0	3
6	23HM1L01	HM	Communicative English Lab	0	0	2	1
7	23BS1L01	BS	Engineering Physics Lab	0	0	2	1
8	23ES1L01	ES	Electrical & Electronics Engineering Workshop	0	0	3	1.5
9	23ES1L04	ES	Computer Programming Lab	0	0	3	1.5
10	23BS1L04	BS	Health & Wellness, Yoga & Sports	0	0	1	0.5
Total credits							19.5

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srikanth, Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan, Professor, Dept. of EEE, UCEK, JNTU Kakinada	
3	Subject expert from outside the college	Dr. K.Siva Kumar, Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar, Asst. professor, Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar, Dy. Manager Oil rigs BHEL, R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

Page 1 of 1
Verified
HOD
Department of Science and Humanities
B.V.C. Engineering College
BONAM AREVU - 533 210
Dr. S. SRIKANTH, B.Tech. M.Tech., Ph.D.
Professor & Head
Department of Electrical and Electronics Engineering
B.V.C. ENGINEERING COLLEGE,
BONAM AREVU - 533 210

COMMUNICATIVE ENGLISH (Common to all branches)

COURSE CODE:

✓ 23HM1T01 (EE, ME, ECE, EEE)

23HH2T01 (CSE, AIDS, AIML,
ESECAIHL)

L	T	P	C
2	-	-	2

Introduction

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of listening, speaking, reading and writing.

Course Objectives:

The main objective of introducing this course, *communicative English*, is to facilitate effective listening, Reading, Speaking and Writing skills among the students.

It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary.

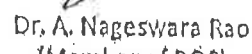
This course helps the students to make them effective in speaking and writing skills and to make them Industry-ready


A.D. Madhuri
(Chairman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

LISTENING SKILLS:

Objectives:

1. To enable the students to appreciate the role of listening skill and improve their pronunciation.
2. To enable the students to comprehend the speech of people belonging to different backgrounds and regions.
3. To enable the students to listen for general content, to fill up information and for specific information.

SPEAKING SKILLS:

Objectives:

1. To make the students aware of the importance of speaking for their personal and professional communication.
2. To enable the students to express themselves fluently and accurately in social and professional success.
3. To help the students describe objects, situations and people.
4. To make the students participate in group activities like role-plays, discussions and debates.
5. To make the students participate in just a minute talks.

READING SKILLS:

Objectives:

1. To enable the students to comprehend a text through silent reading.
2. To enable the students to guess the meanings of words, messages and inferences of texts in given contexts.
3. To enable the students to skim and scan a text.
4. To enable the students to identify the topic sentence.
5. To enable the students to identify discourse features.
6. To enable the students to make intensive and extensive reading.

WRITING SKILLS:

Objectives:

1. To make the students understand that writing is an exact formal skills.
2. To enable the students to write sentences, paragraphs, e-mails and essays.
3. To make the students identify and use appropriate vocabulary.
4. To enable the students to narrate and describe.
5. To enable the students to write coherently and cohesively.


A.D. Madhuri
(Charman-BOS)


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(University Nominee)

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(Subject Expert)


Dr. D. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

Course Outcomes:

At the end of the Course, Student will be able to:

- CO 1: Understand the context, topic and pieces of specific information from social or transactional dialogues.
- CO 2: Apply grammatical structures to formulate sentences and correct word forms.
- CO 3: Analyze discourse markers to speak clearly on a specific topic in informal discussions.
- CO 4: Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
- CO 5: Create a coherent paragraph, essay, and resume.

Methodology:

1. The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I

Lesson: HUMAN VALUES: Gift of Magi (Short Story)

- Listening: Identifying the topic, the context and specific pieces of information by listening to short audio texts and answering a series of questions.
- Speaking: Asking and answering general questions on familiar topics such as home, family, work, studies and interests; Introducing oneself and others.
- Reading: Skimming to get the main idea of a text; scanning to look for specific pieces of information.
- Writing: Mechanics of Writing-Capitalization, Spellings, Punctuation-Parts of Sentences.
- Grammar: Parts of Speech, Basic Sentence Structures-forming questions
- Vocabulary: Synonyms, Antonyms, Affixes (Prefixes/Suffixes), Root words.

UNIT-II

Lesson: NATURE: The Brook by Alfred Tennyson (Poem)

- Listening: Answering a series of questions about main ideas and supporting ideas after listening to audio texts.
- Speaking: Discussion in pairs/small groups on specific topics followed by short structured talks.

Reading: Identifying sequence of ideas; recognizing verbal techniques that help to link the ideas in a paragraph together.
Writing: Structure of a paragraph - Paragraph writing (specific topics)
Grammar: Cohesive devices -linkers, use of articles and zero article; prepositions.
Vocabulary: Homonyms, Homophones, Homographs.

UNIT-III

Lesson: BIOGRAPHY: Elon Musk

Listening: Listening for global comprehension and summarizing what is listened to.
Speaking: Discussing specific topics in pairs or small groups and reporting what is discussed
Reading: Reading a text in detail by making basic inferences-recognizing and interpreting specific context clues; strategies to use text clues for comprehension.
Writing: Summarizing, Note-making, paraphrasing
Grammar: Verbs - tenses; subject-verb agreement;
Vocabulary: Compound words, Collocations

UNIT-IV

Lesson: INSPIRATION: The Toys of Peace by Saki

Listening: Making predictions while listening to conversations/ transactional dialogues without video; listening with video.
Speaking: Role plays for practice of conversational English in academic contexts (formal and informal) - asking for and giving information/directions.
Reading: Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships, and communicate processes or display complicated
Writing: Letter Writing: Official Letters, Resumes
Grammar: Reporting verbs, Direct & Indirect speech, Active & Passive Voice
Vocabulary: Words often confused

UNIT-V

Lesson: MOTIVATION: The Power of Intrapersonal Communication (An Essay)

Listening: Identifying key terms, understanding concepts and answering a series of relevant questions that test comprehension.
Speaking: Formal oral presentations on topics from academic contexts
Reading: Reading comprehension.
Writing: Writing structured essays on specific topics.
Grammar: Editing short texts -identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject verb agreement)
Vocabulary: Technical Jargons
Textbooks:

1. Pathfinder: Communicative English for Undergraduate Students, 1st Edition, Orient Black Swan, 2023 (Units 1,2 & 3)

2. Empowering English by Cengage Publications, 2023 (Units 4 & 5)

Reference Books:

1. Dubey, Sham Ji & Co. English for Engineers, Vikas Publishers, 2020
2. Bailey, Stephen. Academic writing: A Handbook for International Students. Routledge, 2014.
3. Murphy, Raymond. English Grammar in Use, Fourth Edition, Cambridge University Press, 2019.
4. Lewis, Norman. Word Power Made Easy- The Complete Handbook for Building a Superior Vocabulary. Anchor, 2014.

Web Resources:

GRAMMAR:

1. www.bbc.co.uk/learningenglish
2. <https://dictionary.cambridge.org/grammar/british-grammar/>
3. www.eslpod.com/index.html
4. <https://www.learngrammar.net/>
5. <https://english4today.com/english-grammar-online-with-quizzes/>
6. <https://www.talkenglish.com/grammar/grammar.aspx>

VOCABULARY

1. <https://www.youtube.com/c/DailyVideoVocabulary/videos>
2. https://www.youtube.com/channel/UC4cmBAit8I_NJZE8qK8sfpA


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Dr. A. Nageswara Rao
(Member of BOS)

I B.TECH I SEMESTER

LINEAR ALGEBRA AND CALCULUS

Course Code: 23BS1T01

(for all)

L	T	P	C
3	0	0	3

Course Objectives:

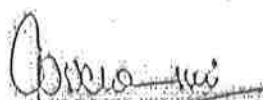
- To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

Course Outcomes:

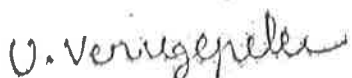
At the end of the course, the student will be able to

- CO1: Develop and use of matrix algebra techniques that are needed by engineers for practical applications.
- CO2: Utilize mean value theorems to real life problems.
- CO3: Familiarize with functions of several variables which is useful in optimization.
- CO4: Learn important tools of calculus in higher dimensions.
- CO5: Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.


A.D. Madhuri
(Chairman-DOS)


Dr. G.V.S.R. Deekshittulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalani
(Subject Expert)


Mr. P. Ganga Raju
(Member, DOS)

UNIT I:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form. Finding two Non Singular matrices when PAQ is in Normal form. Cauchy-Binet formulae (without proof). Inverse of Non-singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method, Electrical Circuits (Application).

UNIT II:- Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, 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.

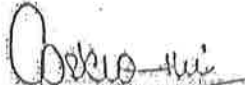
UNIT III:- Calculus

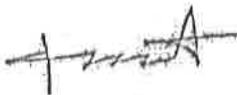
Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin's theorems with remainders (without proof), Problems on the above theorems.

UNIT IV:- Partial differentiation and Applications (Multi variable calculus)

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.


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UNIT V:- Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals)

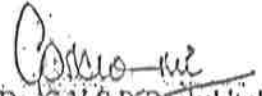
Textbooks:-

1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

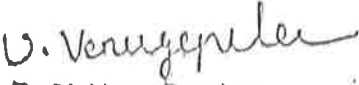
Reference Books:-

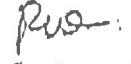
1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Michael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)


A.D. Madhuri
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(Subject Expert)


Dr. U. Venu Gopalram
(Subject Expert)


Mr. P. Changa Raju
(Member, DOS)

ENGINEERING PHYSICS
(Common for all branches of Engineering)

Course Objectives:

To bridge the gap between the Physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc., enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

Course Outcomes:

- Analyse the intensity variation of light due to polarization, interference and diffraction.
- Familiarize with the basics of crystals and their structures.
- Summarize various types of polarization of dielectrics and classify the magnetic materials.
- Explain fundamentals of quantum mechanics and apply to one dimensional motion of particles.
- Identify the type of semiconductor using Hall Effect.

UNIT I Wave Optics

8hrs

Interference: Introduction - Principle of superposition - Interference of light - Interference in thin films (Reflection Geometry) & applications - Colors in thin films - Newton's Rings - Determination of wavelength and refractive index.

Diffraction & Polarisation:

Diffraction: Introduction - Fresnel and Fraunhofer diffractions - Fraunhofer diffraction due to single slit, double slit & N-slits (Qualitative) - Diffraction Grating - Dispersive power and resolving power of Grating (Qualitative).

Polarization: Introduction - Types of polarization - Polarization by reflection, refraction and Double refraction - Nicol's Prism - Half wave and Quarter wave plates

UNIT II Crystallography and X-ray diffraction

8hrs

Crystallography: Space lattice, Basis, Unit Cell and lattice parameters - Bravais Lattices - crystal systems (3D) - coordination number - packing fraction of SC, BCC & FCC - Miller indices - separation between successive (hkl) planes.

X-ray diffraction: Bragg's law - X-ray Diffractometer - crystal structure determination by Laue's and powder methods.

A.D. Madhuri
(Chairperson - BOS)

K. Mohan Kant
Dr. K. Mohan Kant
(Subject Expert)

Dr. G. Padmaja Rani
(University Nominee)

Mr. S.T. Naidu
(Member, BOS)

Dr. T.N.K.V. Prasad
(Subject Expert)

UNIT III Dielectric and Magnetic Materials

Dielectric Materials: Introduction - Dielectric polarization - Dielectric polarizability, Susceptibility, Dielectric constant and Displacement Vector - Relation between the electric vectors - Types of polarizations- Electronic (Quantitative), Ionic (Quantitative) and Orientation polarizations (Qualitative) - Lorentz internal field - Clausius-Mossotti equation - complex dielectric constant - Frequency dependence of polarization - dielectric loss

Magnetic Materials: Introduction - Magnetic dipole moment - Magnetization-Magnetic susceptibility and permeability - Atomic origin of magnetism - Classification of magnetic materials: Dia, para, Ferro, anti-ferro & Ferri magnetic materials - Domain concept of Ferromagnetism & Domain walls (Qualitative) - Hysteresis - soft and hard magnetic materials.

UNIT IV Quantum Mechanics and Free electron theory

7hrs

Quantum Mechanics: Dual nature of matter - Heisenberg's Uncertainty Principle - Significance and properties of wave function - Schrodinger's time independent and dependent wave equations - Particle in a one-dimensional infinite potential well.

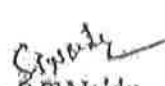
Free Electron Theory: Classical free electron theory (Qualitative with discussion of merits and demerits) - Quantum free electron theory - electrical conductivity based on quantum free electron theory - Fermi-Dirac distribution - Density of states - Fermi energy.


A.D. Madhuri
(Chairperson - BOS)


Dr. G. Padmaja Rani
(University Nominee)


Dr. T.N.K.V. Prasad
(Subject Expert)

K. Mohan Kant
Dr. K. Mohan Kant
(Subject Expert)


Mr. S.T. Naidu
(Member, BOS)

UNIT V Semiconductors:

Semiconductors: Formation of energy bands- classification of crystalline solids - Intrinsic semiconductors: Density of charge carriers - Electrical conductivity - Fermi level - Extrinsic semiconductors - density of charge carriers - dependence of Fermi energy on carrier concentration and temperature - Drift and diffusion currents - Einstein's equation - Hall effect and its applications.

Textbooks:

1. A Text book of Engineering Physics - M. N. Avadhanulu, P.G.Kshirsagar & TVS Arun Murthy, S.Chand Publications, 11th Edition 2019, P.K.Palanasami.
2. Engineering Physics - D.K.Bhattacharya and Poonam Tandon, Oxford press (2015).

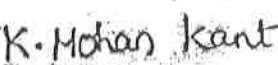
Reference Books:

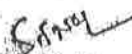
1. Engineering Physics - B.K. Pandey and S. Chaturvedi, Cengage Learning
2. Engineering Physics - Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics - Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press.
4. Engineering Physics - M.R. Srinivasan, New Age International publishers (2009).


A.D. Madhuri
(Chairperson -BOS)


Dr.G.Padmaja Rani
(University Nominee)


Dr.T.N.K.V Prasad
(Subject Expert)


Dr. K.Mohan kant
(Subject Expert)


Mr. S.T.Naidu
(Member, BOS)

BA23-I-I-EEE-(4)

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BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to all branches of engineering)

Subject Code: 23ES1T02

Subject Code: 23ES2T02



Course Objectives

To expose to the field of Electrical & Electronics Engineering, laws and principles of electrical/electronic engineering and to acquire fundamental knowledge in the relevant field.

Course Outcomes: After the completion of the course students will be able to

- Understand the basic electrical circuits, AC machines.
- Analyze different electrical circuits, performance of AC machines.
- Explain the theory, construction, and operation of electronic devices.
- Apply the concept of science and mathematics to explain the working of diodes, transistors, and their applications.
- Analyze different number systems and logic gates.

PART A: BASIC ELECTRICAL ENGINEERING

UNIT I DC & AC Circuits

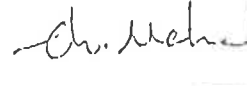
DC Circuits: Electrical circuit elements (R, L and C), Ohm's Law and its limitations, KCL & KVL, series, parallel, series-parallel circuits, Super Position theorem, Simple numerical problems.

AC Circuits: A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor (for sine wave), Voltage and current relationship with phasor diagrams in R, L, and C circuits, Concept of Impedance, Active power, reactive power and apparent power, Concept of power factor (Simple Numerical problems).

UNIT II Machines and Measuring Instruments

Machines: Construction, principle and operation of (i) Single Phase Transformer, (ii) Three Phase Induction Motor and (iii) Alternator, Applications of electrical machines.

Measuring Instruments: Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments and Wheat Stone bridge

					
Dr. S. Srikanth Professor & HOD	Dr. T. Murali Mohan, University Nominee	Dr. K. Siva Kumar Subject expert	Dr. G. Siva Kumar Subject expert	Ch. Mahadev Kumar Representative from Industry	D. Lakshman Kumar Alumni Member

PART B: BASIC ELECTRONICS ENGINEERING

UNIT I Semiconductor Devices

Introduction - Characteristics of PN Junction Diode - Zener Diode and its Characteristics. Bipolar Junction Transistor - CB, CE, CC Configurations and Characteristics.

UNIT II Basic Electronic Circuits And Instrumentation

Rectifiers and power supplies: Block diagram description of a dc power supply, working of a full wave bridge rectifier, capacitor filter (no analysis), RC Coupled amplifier.

Electronic Instrumentation: Block diagram of an electronic instrumentation system.

UNIT III Digital Electronics

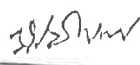
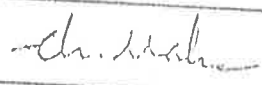
Overview of binary number system, BCD codes, Excess-3 code. Boolean Algebra, Basic Theorems and properties of Boolean Algebra, Truth Tables and simple Logic Gates including Universal Gates - AND, OR, NOT, NOR, NAND, XOR and XNOR. Simple combinational circuits - Half and Full Adders.

Textbooks:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. Switching Theory and Logic Design by A. Anand Kumar, PHI Learning, 3rd Edition.

Reference Books:

1. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
2. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
3. R. T. Paynter, Introductory Electronic Devices & Circuits - Conventional Flow Version, Pearson Education, 2009.

No.	Members	Name & Institution	Signature of member
	Chairman	Dr. S. Srikanth, Professor & HOD	
	University Nominee	Dr. T. Murali Mohan, Professor, Dept. of EEE, UCEK, JNTU Kaklnada	
	Subject expert from outside the college	Dr. K. Siva Kumar, Professor, Dept. of EE, IIT Hyderabad	
	Subject expert from outside the college	Dr. G. Siva Kumar, Asst. professor, Dept. of EE, NIT Warangal	
	Representative from Industry	Ch. Mahadev Kumar, Dy. Manager Oil rigs DHEL, R C Puram Hyderabad	
	Alumni Member	D. Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WO Dist.	

UNIT III Energy Resources, Electricity Bill & Safety Measures

Energy Resources: Conventional and non-conventional energy resources; Layout and operation of various Power Generation systems: Hydel & Solar power generation.

Electricity bill: Power rating of household appliances including air conditioners, PCs, Laptops, Printers, etc. Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers.

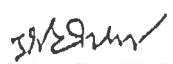
Equipment Safety Measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits. **Personal safety measures:** Electric Shock, Earthling and its types, Safety Precautions to avoid shock.

Textbooks:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

Reference Books:

1. Principles of Power Systems by V.K. Mehtha, S.Chand Technical Publishers, 2020.
2. A textbook of Electrical Technology by B.L. Theraja, S. Chand and Company, reprint edition, 2014.
3. S. K. Bhattacharya, Basic Electrical and Electronics Engineering, Second Edition, Person Publications, 2018.

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srikanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kakinada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar ,Dy. Manager Oil rigs BHEL, R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

I Year - I Semester	Code: 23ES1T04	L	T	P	C
		3	0	0	3
INTRODUCTION TO PROGRAMMING (Common to All branches of Engineering)					
Course Objectives:					
- To introduce students to the fundamentals of computer programming. - To provide hands-on experience with coding and debugging. - To foster logical thinking and problem-solving skills using programming. - To familiarize students with programming concepts such as data types, control structures, functions, and arrays. - To encourage collaborative learning and teamwork in coding projects.					
Course Outcomes:					
A student after completion of the course will be able to					
CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking.					
CO2: Analyze a problem and develop an algorithm to solve it.					
CO3: Implement various algorithms using the C programming language.					
CO4: Understand more advanced features of C language.					
CO5: Develop problem-solving skills and the ability to debug and optimize the code					
UNIT-I: Introduction to Programming and Problem Solving: Computer System: History of Computers, Introduction to Components of Computer System, compilation and execution, Program Counter Basics of a Computer Program-. Programming Languages and History of C, Basics Structure of a Computer Program, Software Development Process: Characteristics Algorithm, Flowchart, Pseudo Code, Header file, Errors in compilation time, Primitive Data Types, Formatted I/O's, Format Modifiers. Variable Rules, Keywords, Constants, String and Operators. Type Conversions, Priority Table Problemsolving strategies: Top-down and Bottom-up approach, Time and space complexities.					
UNIT -II: Control Structures (Flow of Controls):					
Decision Branching Statement (Selection): Two-way selection: if, if-else, nested if Multi-way selection: switch, else-if ladder Decision Looping Statement (Repetition/Iterative): while (Pretest/Condition-Controlled Loops) and do-while (Post test) Loops, for loop (Counter Controlled) and Unconditional statements, Nested Loops					
UNIT-III Arrays & Pointers:					
Arrays: Arrays definition and indexing, Types of Arrays One-Dimensional Arrays: Initialization, declaration and accessing, input and output of array Two-Dimensional Arrays: Initialization, declaration, accessing, input and output of array Case Study: Matrices, Larger Dimensional Arrays Pointers: Concept of a pointer, Initialization of pointer variables and access, Pointer dereferencing and address operators, array manipulation using pointers, Dynamic Memory Management functions, pointers to pointers, command line arguments					

H.R. K. K.	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy, Professor of CSE, BVCEC.

UNIT-IV: Functions & Strings:

Functions: Definition of Function, Categorization of User define functions, Local, Global variables and Actual and Formal parameters, Scope life time variables, pass by value and reference, Recursive function

Case Study: Factorial, Fibonacci Series, Basics of Sorting/and Searching

Strings: Introduction to String, String Handling Functions

UNIT-V: User Defined Data Types & File Handling:

User Defined Data Types: Structures: declaration, Initialization, accessing, nested structures, self-referential structure, structures to array, pointer and functions, Union, typedef and enum

File Handling: Basics of File Handling (only if time is available, otherwise should be done as part of the lab).

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, Second Edition 2015.
2. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill, Second Edition.
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1. Computing fundamentals and C Programming, E Balagurusamy, McGraw- Hill/Education.
2. Programming in C, Rema Tharaja, Oxford, 2016, 2nd edition
3. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage
4. C Programming- A Beginners Guide by Prof. Mangesh, Dr. D R Shashirag, Prof. Bodapati Narasimha Rao, Prof. B P N Madhu Kumar.

<i>H.R. K</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>programming</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

Professor

Department of CSE
University College of Engg.
JNTUK Kakinada.

BR23 - I - I - EEE - (6)

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COMMUNICATIVE ENGLISH LAB

(Common to all branches)

COURSE CODE:-

✓ 23HS1LOI (EC, HE, ECE, EEE)

23HS2LOI (CSE, AIO, AIML, CSE (AIML))

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OBJECTIVES

The main objective of introducing this course, *Communicative English Laboratory*, is to expose the students to a variety of self-instructional, learner friendly modes of language learning students will get trained in the basic communication skills and also make them ready to face job interviews.

OUTCOMES

CO 1: Understand the different aspects of the English language proficiency with emphasis on LSRW skills.

CO 2: Apply communication skills through various language learning activities.

CO3: Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.

CO4: Evaluate and exhibit professionalism in participating in debates and group discussions.

CO5: Create effective response and prepare themselves to face interviews in future.

List of Topics:

1. Vowels & Consonants
2. Neutralization/Accent Rules
3. Communication Skills & JAM
4. Role Play or Conversational Practice
5. E-mail Writing
6. Resume Writing, Cover letter, SOP
7. Group Discussions-methods & practice
8. Debates- Methods & Practice
9. PPT Presentations/ Poster Presentation
10. Interview Skills

A. D. Madhuri
(Chairman-BOS)

Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)

B. Anesh Babu
Dr. B. Anesh Babu
(Subject Expert)

Dr. A. Nageswara Rao
(Member of BOS)

Lab Software: Globarena Technologies Ltd.,

Reference Books:

1. Meenakshi Raman, Sangeeta-Sharma. Technical Communication, Oxford Press.2018.
2. Grant Taylor; English Conversation Practice, Tata McGraw-Hill EducationIndia,2016
3. Hewling's, Martin. Cambridge Academic English (B2). CUP, 2012.
4. T.Balasubramanyam, A Textbook of English Phonetics for Indian Students,(3rd Ed) Trinity Press.

Web Resources:

Spoken English:

1. www.esl-lab.com
2. www.englishmedialab.com
3. www.englishinteractive.net
4. <https://www.britishcouncil.in/english/online>
5. <http://www.letstalkpodcast.com/>
6. https://www.youtube.com/c/mmmEnglish_Emma/featured
7. <https://www.youtube.com/c/ArnelsEverydayEnglish/featured>
8. <https://www.youtube.com/c/engvidAdam/featured>
9. <https://www.youtube.com/c/EnglishClass101/featured>
10. <https://www.youtube.com/c/SpeakEnglishWithTiffani/playlists>
11. https://www.youtube.com/channel/UCV1h_cBE0Drdx19qkTM0WNw

Voice & Accent:

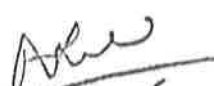
1. <https://www.youtube.com/user/letstalkaccent/videos>
2. <https://www.youtube.com/c/EngLanguageClub/featured>
3. https://www.youtube.com/channel/UC_OskgZBoS4dAnVUgJVexc
4. https://www.youtube.com/channel/UCNfm92h83W2l2lc5Xwp_1A


A.D. Machuri
(Charman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Hageswara Rao
(Member of BOS)

BR23-I-I-EEE-(7)

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ENGINEERING PHYSICS LAB
(Common to All Branches of Engineering)

Course Objectives:

To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes: The students will be able to

- Operate optical instruments like travelling microscope and spectrometer.
- Estimate the wavelengths of different colors using diffraction grating.
- Plot the intensity of the magnetic field of circular coil carrying current with distance.
- Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively.
- Calculate the band gap of a given semiconductor.
- Identify the type of semiconductor using Hall Effect.
- Identify the different types of semiconductor diodes and their applications.
- Analyse the experimental data on Planck's constant and compare it to theoretical predictions.

List of Experiments:

1. Determination of radius of curvature of a given planoconvex lens by Newton's rings.
2. Determination of wavelength of different spectral lines in mercury spectrum using diffraction grating in normal incidence configuration.
3. Verification of Brewster's law
4. Determination of dielectric constant using charging and discharging method.
5. Study the variation of B versus H by magnetizing the magnetic material (B-H curve).
6. Determination of wavelength of Laser light using diffraction grating.
7. Estimation of Planck's constant using photoelectric effect.
8. Determination of the resistivity of semiconductors by four probe methods.
9. Determination of energy gap of a semiconductor using p-n junction diode.
10. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.

Ms. A.D. Madhuri
(Chairperson - BOS)

Dr. G. Padmaja Rani
(University Nominee)

Dr. T.N.K.V. Prasad
(Subject Expert)

K. Mohan Kant
Dr. K. Mohankant
(Subject Expert)

Mr. S.T. Naidu
(Member, BOS)

ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

(Common to All branches of Engineering)

Subject Code: 23ES1L01

~~Subject Code: 23ES2L01~~**Course Objectives:**

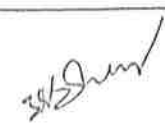
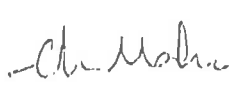
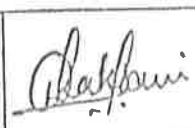
- To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.
- To impart knowledge on the principles of digital electronics and fundamentals of electron devices.

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

- Get an exposure to common electrical & electronic components and their ratings.
- Understand the usage of common electrical & electronic measuring instruments.
- Understand the basic characteristics of electrical machines and perform energy calculations.
- Plot and discuss the characteristics of various electron devices.
- Explain the operation of a digital circuit.

Activities:

1. Familiarization of commonly used Electrical & Electronic Workshop Tools: Bread board, Solder, cables, relays, switches, connectors, fuses, Cutter, plier, screwdriver set, wirestripper, flux, knife/blade, soldering iron, de-soldering pump etc.
 - Provide some exercises so that hardware tools and instruments are learned to be used by the students.
2. Familiarization of Measuring Instruments like Voltmeters, Ammeters, multimeter, LCR-Q meter, Power Supplies, CRO, DSO, Function Generator, Frequency counter.
 - Provide some exercises so that measuring instruments are learned to be used by the students.
3. Components:
 - Familiarization/Identification of components (Resistors, Capacitors, Inductors, Diodes, transistors, IC's etc.) – Functionality, type, size, colour coding package, symbol, cost etc.
 - Testing of components like Resistor, Capacitor, Diode, Transistor, ICs etc. - Compare values of components like resistors, inductors, capacitors etc with the measured values by using instrument.

					
Dr. S. Srikanth Professor & HOD	Dr. T. Murali Mohan, University Nominee	Dr. K. Siva Kumar Subject expert	Dr. G. Siva Kumar Subject expert	Ch. Mahadev Kumar Representative from Industry	D. Lakshman Kumar Alumni Member

PART A: BASIC ELECTRICAL ENGINEERING LAB

List of experiments:

(Any 5 of the following experiments are to be conducted)

1. Verification of KCL and KVL
2. Verification of Superposition theorem
3. Measurement of Resistance using Wheat stone bridge
4. O.C & S.C Characteristics of Single Phase Transformer
5. Measurement of Power and Power factor using Single-phase wattmeter
6. Measurement of Earth Resistance using Megger
7. Calculation of Electrical Energy for Domestic Premises

References:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

PART B: BASIC ELECTRONICS ENGINEERING LAB

List of Experiments:

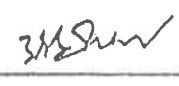
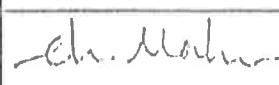
(Any 5 of the following experiments are to be conducted)

1. Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.
2. Plot V – I characteristics of Zener Diode and its application as voltage Regulator.
3. Implementation of half wave with and without filter.
4. Implementation of full wave rectifier with and without filter.
5. Plot Input & Output characteristics of BJT in CE configuration.
6. Plot Input & Output characteristics of BJT in CB configuration.
7. Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs.

Tools / Equipment Required: DC Power supplies, Multi meters, DC Ammeters, DC Voltmeters, AC Voltmeters, CROs, all the required active devices.

References:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srikanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kakinada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar , Dy. Manager Oil rigs BHEL , R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

I Year - I Semester	Code: 23ES1L04	L	T	P	C
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COMPUTER PROGRAMMING LAB (Common to All branches)					
Course Objectives: The course aims to give students hands – on experience and train them on the concepts of the C programming language.					
Course Outcomes: CO1: Read, understand, and trace the execution of programs written in C language. CO2: Select the right control structure for solving the problem. CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers. CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.					
UNIT I WEEK 1: Objective: Getting familiar with the programming environment on the computer and writing the first program. Suggested Experiments/Activities: Tutorial 1: Problem-solving using Computers. Lab1: Familiarization with programming environment i) Basic Linux environment and its editors like Vi, Vim & Emacs etc. ii) Exposure to Turbo C, gcc iii) Writing simple programs using printf(), scanf() WEEK 2: Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation. Suggested Experiments /Activities: Tutorial 2: Problem-solving using Algorithms and Flow charts. Lab 2: Converting algorithms/flow charts into C Source code. Developing the algorithms/flowcharts for the following sample programs i) Sum and average of 3 numbers ii) Conversion of Fahrenheit to Celsius and vice versa ii) Simple interest calculation WEEK 3: Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants. Suggested Experiments/Activities: Tutorial 3: Variable types and type conversions: Lab 3: Simple computational problems using arithmetic expressions. i) Finding the square root of a given number ii) Finding compound interest iii) Area of a triangle using heron's formulae iv) Distance travelled by an object					

N. R. ... Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada. Professor of CSE	online Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	online Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	online Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	online Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	online Dr. B S N Murthy Professor of CSE, BVCEC.
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UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial 4: Operators and the precedence and as associativity:

Lab 4: Simple computational problems using the operator' precedence and associativity

- Evaluate the following expressions.
 - $A+B*C+(D*E) + F*G$
 - $A/B*C-B+A*D/3$
 - $A+++B---A$
 - $J=(i++) + (++i)$
- Find the maximum of three numbers using conditional operator
- Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5:

Objective: Explore the full scope of different variants of "if construct" namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

- Write a C program to find the max and min of four numbers using if-else.
- Write a C program to generate electricity bill.
- Find the roots of the quadratic equation.
- Write a C program to simulate a calculator using switch case.
- Write a C program to find the given year is a leap year or not.

WEEK 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

- Find the factorial of given number using any loop.
- Find the given number is a prime or not.
- Compute sine and cos series
- Checking a number palindrome
- Construct a pyramid of numbers.

<i>K. R. ...</i>	online	online	online	online	<i>programming</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIMI) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- Find the min and max of a 1-D integer array.
- Perform linear search on 1D array.
- The reverse of a 1D integer array
- Find 2's complement of the given binary number.
- Eliminate duplicate elements in an array.

WEEK 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting

Lab 8: Matrix problems, String operations, Bubble sort

- Addition of two matrices
- Multiplication two matrices
- Sort array elements using bubble sort

WEEK 9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 9: Pointers and dynamic memory allocation

Lab 9: Pointers and memory dereference.

- Write a C program to find the sum of a 1D array using malloc ()
- Enter n students data using calloc () and display failed students list
- Write a C program to implement realloc ()

<i>A. R. ...</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>gammith</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

Professor

UNIT IV

WEEK 10:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

Tutorial 10: Functions, call by value, scope and extent,

Lab 10: Simple functions using call by value, solving differential equations using Eulers theorem.

- Concatenate two strings without built-in functions
- Reverse a string using built-in and without built-in string functions
- Write a C function to find the length of a string.
- Write a C function to transpose of a matrix.
- Write a C function to demonstrate numerical integration of differential equations using Euler's method

WEEK 11:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions.

Suggested Experiments/Activities:

Tutorial 11: Recursion, recursive calls

Lab 11: Recursive functions

- Write a recursive function to generate Fibonacci series.
- Write a recursive function to find the lcm of two numbers.
- Write a recursive function to find the factorial of a number.
- Write a C Program to implement Ackermann function using recursion.
- Write a recursive function to find the sum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 12: Call by reference, dangling pointers

Lab 12: Simple functions using Call by reference, Dangling pointers.

- Write a C program to swap two numbers using call by reference.
- Demonstrate Dangling pointer problem using a C program.
- Write a C program to copy one string into another using pointer.
- Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

N. R. Rao	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE. UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor Department of CSE					

UNIT V

WEEK 13:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 13: Structure, Bitfields, Self-Referential Structures, Linked lists

Lab13: Structure, Self-Referential Structures, Bitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit- fields

- Write a C program to find the total, average of n students using structures
- Read student name and marks from the command line and display the student details along with the total.
- Create and display a singly linked list using self-referential structure.
- Demonstrate the differences between structures and unions using a C program.
- Write a C program to shift/rotate using bitfields.
- Write a C program to copy one structure variable to another structure of the same type.

WEEK14:

Objective: To understand data files and file handling with various file I/O functions.

Explore the differences between text and binary files,

Suggested Experiments/Activities:

Tutorial 14: File handling

Lab 14: File operations

- Write a C program to write and read text into a file.
- Write a C program to write and read text into a binary file using fread() and fwrite()
- Copy the contents of one file to another file.
- Write a C program to merge two files into the third file using command-line arguments.
- Find no. of lines, words and characters in a file
- Write a C program to print last n characters of a given file.

Text Books:

- Programming in C - A practical approach by Ajay Mittal, Pearson Education, First Edition.
- Schaum's Outline of Programming with C by Byron S. Gottfried, McGraw Hill, Second Edition.

Reference Books:

- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India
- C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

<i>H. R. Ravi</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>grammar</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

Department of CSE
JNTUK College of Engg.
JNTUK Kakinada.

L	T	P	C
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HEALTH AND WELLNESS, YOGA AND SPORTS

(Common to All branches of Engineering)

3

23BS1L04(CI,EEE,MEC,ECT)

23BS2L04((CSE,AIDS,AIML,CSE(AIML))

Course Objectives:

The main objective of introducing this course is to make the students maintain their mental and physical wellness by balancing emotions in their life. It mainly enhances the essential traits required for the development of the personality.

Course Outcomes: After completion of the course the student will be able to
 CO1: Understand the importance of yoga and sports for Physical fitness and sound health.
 CO2: Demonstrate an understanding of health-related fitness components.
 CO3: Compare and contrast various activities that help enhance their health.
 CO4: Assess current personal fitness levels.
 CO5: Develop Positive Personality

UNIT I

Concept of health and fitness, Nutrition and Balanced diet, basic concept of immunity Relationship between diet and fitness, Globalization and its impact on health, Body Mass Index(BMI) of all age groups.

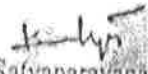
Activities:

- Organizing health awareness programmes in community
- Preparation of health profile
- Preparation of chart for balance diet for all age groups


 Mrs. A.D. Madhuri
 (Chairperson - JIOS)

Dr. G. Shyam Kumar
 (University Nominee)


 T. Durga Rao
 (M.P.Ed)


 K. Satyanarayana
 (B.P.Ed)

Reference Books:

1. Gordon Edlin, Eric Golanty. Health and Wellness, 14th Edn. Jones & Bartlett Learning, 2022
2. T.K.V.Desikachar. The Heart of Yoga: Developing a Personal Practice
3. Archie J.Balm. Yoga Sutras of Patanjali, Jain Publishing Company, 1993
4. Wiseman, John Lofty, SAS Survival Handbook: The Ultimate Guide to Surviving Anywhere Third Edition, William Morrow Paperbacks, 2014
5. The Sports Rules Book/ Human Kinetics with Thomas Hanlon. -- 3rd ed. Human Kinetics, Inc. 2014

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities of Health/Sports/Yoga.
2. Institutes must provide field/facility and offer the minimum of five choices of as many as Games/Sports.
3. Institutes are required to provide sports instructor / yoga teacher to mentor the students.

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.


Mrs. A.D. Madhuri
(Chairperson -BOS)

Dr.G.Shyam Kumar
(University Nominee)


T Durga Rao
(M P Ed)


K Satyanarayana
(B P Ed)

UNIT II

Concept of yoga, need for and importance of yoga, origin and history of yoga in Indian context, classification of yoga, Physiological effects of Asanas- Pranayama and meditation, stress management and yoga, Mental health and yoga practice.

Activities:

Yoga practices - Asana, Kriya, Mudra, Nandha, Dhyana, Surya Namaskar

UNIT III

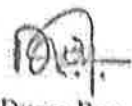
Concept of Sports and fitness, importance, fitness components, history of sports, Ancient and Modern Olympics, Asian games and Commonwealth games.

Activities:

- i) Participation in one major game and one individual sport viz., Athletics, Volleyball, Basketball, Handball, Football, Badminton, Kabaddi, Kho-kho, Table tennis, Cricket etc.
Practicing general and specific warm up, aerobics
- ii) Practicing cardiorespiratory fitness, treadmill, run test, 9 min walk, skipping and running.


Mr. A. D. Madhuri
(Chairperson - BOS)

Dr. G. Shyam Kumar
(University Nominee)


T. Durga Rao
(M. P. Ed.)


K. Satyanarayana
(B. P. Ed.)

BR23 Course Structure for I Yr UG Program in Mechanical Engineering
(with effect from 2023-24 Admitted Batch)

BR23
I-I
ME

Semester I (First Year: I-I)

Sl. No	Course Category	Course Code	Course Title	Hours per Week			Credits
				L	T	P	
1	HM	23HM1T01	Communicative English	2	0	0	2
2	BS	23BS1T01	Linear Algebra & Calculus	3	0	0	3
3	BS	23BS1T02	Engineering Physics	3	0	0	3
4	ES	23ES1T02	Basic Electrical & Electronics Engineering	3	0	0	3
5	ES	23ES1T04	Introduction to Programming	3	0	0	3
6	HM (Lab)	23HM1L01	Communicative English Lab	0	0	2	1
7	BS (Lab)	23BS1L01	Engineering Physics Lab	0	0	2	1
8	ES (Lab)	23ES1L01	Electrical & Electronics Engineering Workshop	0	0	3	1.5
9	ES (Lab)	23ES1L04	Computer Programming Lab	0	0	3	1.5
10	BS	23BS1L04	Health & Wellness, Yoga & Sports	0	0	1	0.5
Total Credits							19.5

Dr. A. Swarna Kumari Professor in ME Dept.,UCEK (A), JNTUK	Dr. K Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

BR 23-I-I-MEC-(1)

3

✓ COMMUNICATIVE ENGLISH
(Common to all branches)

L	T	P	C
2	-	-	2

COURSE CODE:

✓ 23HM1T01 (CE, ME, EEE, EEE)-

23HM2T01 (CSE, AIDS, AIHL,
CSECATHL)-

Introduction

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of listening, speaking, reading and writing.

Course Objectives:

The main objective of introducing this course, *communicative English*, is to facilitate effective listening, Reading, Speaking and Writing skills among the students.

It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary.

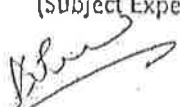
This course helps the students to make them effective in speaking and writing skills and to make them industry-ready.


A.D. Madhuri
(Chairman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

LISTENING SKILLS:

Objectives:

1. To enable the students to appreciate the role of listening skill and improve their pronunciation.
2. To enable the students to comprehend the speech of people belonging to different backgrounds and regions.
3. To enable the students to listen for general content, to fill up information and for specific information.

SPEAKING SKILLS:

Objectives:

1. To make the students aware of the importance of speaking for their personal and professional communication.
2. To enable the students to express themselves fluently and accurately in social and professional success.
3. To help the students describe objects, situations and people.
4. To make the students participate in group activities like role-plays, discussions and debates.
5. To make the students participate in just a minute talks.

READING SKILLS:

Objectives:

1. To enable the students to comprehend a text through silent reading.
2. To enable the students to guess the meanings of words, messages and inferences of texts in given contexts.
3. To enable the students to skim and scan a text.
4. To enable the students to identify the topic sentence.
5. To enable the students to identify discourse features.
6. To enable the students to make intensive and extensive reading.

WRITING SKILLS:

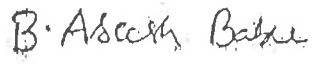
Objectives:

1. To make the students understand that writing is an exact formal skills.
2. To enable the students to write sentences, paragraphs, e-mails and essays.
3. To make the students identify and use appropriate vocabulary.
4. To enable the students to narrate and describe.
5. To enable the students to write coherently and cohesively.


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(Charman-BOS)


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Dr. A. Nageswara Rao
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Course Outcomes:

At the end of the Course, Student will be able to:

- CO 1: Understand the context, topic and pieces of specific information from social or transactional dialogues.
- CO 2: Apply grammatical structures to formulate sentences and correct word forms.
- CO 3: Analyze discourse markers to speak clearly on a specific topic in informal discussions.
- CO 4: Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
- CO 5: Create a coherent paragraph, essay, and resume.

Methodology:

1. The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I

Lesson: HUMAN VALUES: Gift of Magi (Short Story)

- Listening: Identifying the topic, the context and specific pieces of information by listening to short audio texts and answering a series of questions.
- Speaking: Asking and answering general questions on familiar topics such as home, family, work, studies and interests; Introducing oneself and others.
- Reading: Skimming to get the main idea of a text; scanning to look for specific pieces of information.
- Writing: Mechanics of Writing-Capitalization, Spellings, Punctuation-Parts of Sentences.
- Grammar: Parts of Speech, Basic Sentence Structures-forming questions
- Vocabulary: Synonyms, Antonyms, Affixes (Prefixes/Suffixes), Root words.

UNIT-II

Lesson: NATURE: The Brook by Alfred Tennyson (Poem)

- Listening: Answering a series of questions about main ideas and supporting ideas after listening to audio texts.
- Speaking: Discussion in pairs/small groups on specific topics followed by short structured talks.

Reading: Identifying sequence of ideas; recognizing verbal techniques that help to link the Ideas in a paragraph together.
Writing: Structure of a paragraph - Paragraph writing (specific topics)
Grammar: Cohesive devices -linkers, use of articles and zero article; prepositions.
Vocabulary: Homonyms, Homophones, Homographs.

UNIT-III

Lesson: BIOGRAPHY: Elon Musk

Listening: Listening for global comprehension and summarizing what is listened to.
Speaking: Discussing specific topics in pairs or small groups and reporting what is discussed
Reading: Reading a text in detail by making basic inferences-recognizing and interpreting specific context clues; strategies to use text clues for comprehension.
Writing: Summarizing, Note-making, paraphrasing
Grammar: Verbs - tenses; subject-verb agreement;
Vocabulary: Compound words, Collocations

UNIT-IV

Lesson: INSPIRATION: The Toys of Peace by Saki

Listening: Making predictions while listening to conversations/ transactional dialogues without video; listening with video.
Speaking: Role plays for practice of conversational English in academic contexts (formal and informal) - asking for and giving information/directions.
Reading: Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships, and communicate processes or display complicated
Writing: Letter Writing: Official Letters, Resumes
Grammar: Reporting verbs, Direct & Indirect speech, Active & Passive Voice
Vocabulary: Words often confused

UNIT-V

Lesson: MOTIVATION: The Power of Intrapersonal Communication (An Essay)

Listening: Identifying key terms, understanding concepts and answering a series of relevant questions that test comprehension.
Speaking: Formal oral presentations on topics from academic contexts
Reading: Reading comprehension.
Writing: Writing structured essays on specific topics.
Grammar: Editing short texts -identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject verb agreement)
Vocabulary: Technical Jargons
Textbooks:

1. Pathfinder: Communicative English for Undergraduate Students, 1st Edition, Orient Black Swan, 2023 (Units 1,2 & 3)

2. Empowering English by Cengage Publications, 2023 (Units 4 & 5)

Reference Books:

1. Dubey, Sham Ji & Co. English for Engineers, Vikas Publishers, 2020
2. Bailey, Stephen. Academic writing: A Handbook for International Students. Routledge, 2014.
3. Murphy, Raymond. English Grammar in Use, Fourth Edition, Cambridge University Press, 2019.
4. Lewis, Norman. Word Power Made Easy- The Complete Handbook for Building a Superior Vocabulary. Anchor, 2014.

Web Resources:

GRAMMAR:

1. www.bbc.co.uk/learningenglish
2. <https://dictionary.cambridge.org/grammar/british-grammar/>
3. www.eslpod.com/index.html
4. <https://www.learngrammar.net/>
5. <https://english4today.com/english-grammar-online-with-quizzes/>
6. <https://www.talkenglish.com/grammar/grammar.aspx>

VOCABULARY

1. <https://www.youtube.com/c/DailyVideoVocabulary/videos>
2. https://www.youtube.com/channel/UC4cmBAIt8I_NJZE8qK8sfpA


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(Member of BOS)

6

I B.TECH.I SEMESTER

LINEAR ALGEBRA AND CALCULUS

Course Code: 23BS1T01 ✓

(for all)

L	T	P	C
3	0	0	3

Course Objectives:

- To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

Course Outcomes:

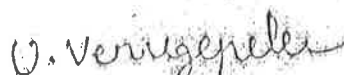
At the end of the course, the student will be able to

- CO1: Develop and use of matrix algebra techniques that are needed by engineers for practical applications.
- CO2: Utilize mean value theorems to real life problems.
- CO3: Familiarize with functions of several variables which is useful in optimization.
- CO4: Learn important tools of calculus in higher dimensions.
- CO5: Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.


A.D. Madhuri
(Chairman, BOS)


Dr. G.V.S.R. Deekshithulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalani
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

(7)

UNIT I:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form. Finding two Non Singular matrices when PAQ is in Normal form. Cauchy-Binet formulae (without proof). Inverse of Non-singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method, Electrical Circuits (Application).

UNIT II:- Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, 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.

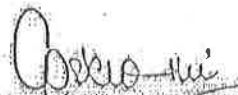
UNIT III:- Calculus

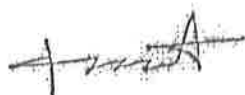
Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems on the above theorems.

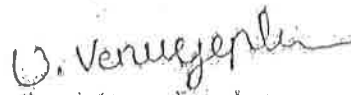
UNIT IV:- Partial differentiation and Applications (Multi variable calculus)

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.


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Mr. P. Ganga Raju
(Member, BOS)

UNITY:- Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals)

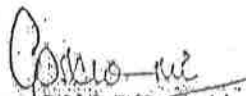
Textbooks:-

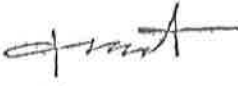
1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

Reference Books:-

1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Michael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshittulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Oanga Raju
(Member, BOS)

ENGINEERING PHYSICS
(Common for all branches of Engineering)

Course Objectives:

To bridge the gap between the Physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc., enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

Course Outcomes:

- Analyse the intensity variation of light due to polarization, interference and diffraction.
- Familiarize with the basics of crystals and their structures.
- Summarize various types of polarization of dielectrics and classify the magnetic materials.
- Explain fundamentals of quantum mechanics and apply to one dimensional motion of particles.
- Identify the type of semiconductor using Hall Effect.

UNIT I Wave Optics

8hrs

Interference: Introduction - Principle of superposition - Interference of light - Interference in thin films (Reflection Geometry) & applications - Colors in thin films - Newton's Rings - Determination of wavelength and refractive index.

Diffraction & Polarisation:

Diffraction: Introduction - Fresnel and Fraunhofer diffractions - Fraunhofer diffraction due to single slit, double slit & N-slits (Qualitative) - Diffraction Grating - Dispersive power and resolving power of Grating (Qualitative).

Polarization: Introduction - Types of polarization - Polarization by reflection, refraction and Double refraction - Nicol's Prism - Half wave and Quarter wave plates

UNIT II Crystallography and X-ray diffraction

8hrs

Crystallography: Space lattice, Basis, Unit Cell and lattice parameters - Bravais Lattices - crystal systems (3D) - coordination number - packing fraction of SC, BCC & FCC - Miller indices - separation between successive (hkl) planes.

X-ray diffraction: Bragg's law - X-ray Diffractometer - crystal structure determination by Laue's and powder methods.

A. D. Madhuri
(Chairperson - BOS)

K. Mohan Kant
Dr. K. Mohan Kant
(Subject Expert)

Dr. G. Padmaja Rani
(University Nominee)

Mr. S. T. Naidu
(Member, BOS)

Dr. T. N. K. V. Prasad
(Subject Expert)

UNIT III Dielectric and Magnetic Materials

Dielectric Materials: Introduction - Dielectric polarization - Dielectric polarizability, Susceptibility, Dielectric constant and Displacement Vector - Relation between the electric vectors - Types of polarizations- Electronic (Quantitative), Ionic (Quantitative) and Orientation polarizations (Qualitative) - Lorentz internal field - Clausius-Mossotti equation - complex dielectric constant - Frequency dependence of polarization - dielectric loss

Magnetic Materials: Introduction - Magnetic dipole moment - Magnetization-Magnetic susceptibility and permeability - Atomic origin of magnetism - Classification of magnetic materials: Dia, para, Ferro, anti-ferro & Ferri magnetic materials - Domain concept of Ferromagnetism & Domain walls (Qualitative) - Hysteresis - soft and hard magnetic materials.

7hrs

UNIT IV Quantum Mechanics and Free electron theory

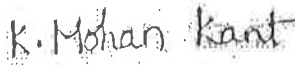
Quantum Mechanics: Dual nature of matter - Heisenberg's Uncertainty Principle - Significance and properties of wave function - Schrodinger's time independent and dependent wave equations - Particle in a one-dimensional infinite potential well.

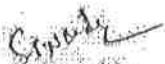
Free Electron Theory: Classical free electron theory (Qualitative with discussion of merits and demerits) - Quantum free electron theory - electrical conductivity based on quantum free electron theory - Fermi-Dirac distribution - Density of states - Fermi energy.


A.D. Madhuri
(Chairperson - BOS)


Dr. G. Padmaja Rani
(University Nominee)


Dr. T.N.K.V. Prasad
(Subject Expert)


Dr. K. Mohan Kant
(Subject Expert)


Mr. S.T. Naidu
(Member, BOS)

UNIT V Semiconductors:

Semiconductors: Formation of energy bands- classification of crystalline solids - Intrinsic semiconductors: Density of charge carriers - Electrical conductivity - Fermi level - Extrinsic semiconductors - density of charge carriers - dependence of Fermi energy on carrier concentration and temperature - Drift and diffusion currents - Einstein's equation - Hall effect and its applications.

Textbooks:

1. A Text book of Engineering Physics - M. N. Avadhanulu, P.G.Kshirsagar & TVS Arun Murthy, S.Chand Publications, 11th Edition 2019, P.K.Palanasami.
2. Engineering Physics - D.K.Bhattacharya and Poonam Tandon, Oxford press (2015).

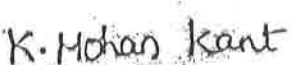
Reference Books:

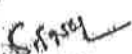
1. Engineering Physics - B.K. Pandey and S. Chaturvedi, Cengage Learning
2. Engineering Physics - Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics - Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press.
4. Engineering Physics - M.R. Srinivasan, New Age International publishers (2009).


A.D. Madhuri
(Chairperson -BOS)


Dr.G.Padmaja Rani
(University Nominee)


Dr.T.N.K.V Prasad
(Subject Expert)


Dr. K.Mohan kant
(Subject Expert)


Mr. S.T.Naidu
(Member, BOS)

BR23-I-EEEC-4

L T P C
3 0 0 3**BASIC ELECTRICAL & ELECTRONICS ENGINEERING**

(Common to all branches of engineering)

Subject Code: 23ES1T02 ✓

~~Subject Code: 23ES2T02~~

④

Course Objectives

To expose to the field of Electrical & Electronics Engineering, laws and principles of electrical/electronic engineering and to acquire fundamental knowledge in the relevant field.

Course Outcomes: After the completion of the course students will be able to

- Understand the basic electrical circuits, AC machines.
- Analyze different electrical circuits, performance of AC machines.
- Explain the theory, construction, and operation of electronic devices.
- Apply the concept of science and mathematics to explain the working of diodes, transistors, and their applications.
- Analyze different number systems and logic gates.

PART A: BASIC ELECTRICAL ENGINEERING**UNIT I DC & AC Circuits**

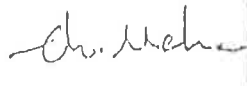
DC Circuits: Electrical circuit elements (R, L and C), Ohm's Law and its limitations, KCL & KVL, series, parallel, series-parallel circuits, Super Position theorem, Simple numerical problems.

AC Circuits: A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor (for sine wave), Voltage and current relationship with phasor diagrams in R, L, and C circuits, Concept of Impedance, Active power, reactive power and apparent power, Concept of power factor (Simple Numerical problems).

UNIT II Machines and Measuring Instruments

Machines: Construction, principle and operation of (i) Single Phase Transformer, (ii) Three Phase Induction Motor and (iii) Alternator, Applications of electrical machines.

Measuring Instruments: Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments and Wheat Stone bridge

					
Dr. S. Srikanth Professor & HOD	Dr. T. Murali Mohan, University Nominee	Dr. K. Siva Kumar Subject expert	Dr. G. Siva Kumar Subject expert	Ch. Mahadev Kumar Representative from Industry	D. Lakshman Kumar Alumni Member

13

UNIT III Energy Resources, Electricity Bill & Safety Measures

Energy Resources: Conventional and non-conventional energy resources; Layout and operation of various Power Generation systems: Hydel & Solar power generation.

Electricity bill: Power rating of household appliances including air conditioners, PCs, Laptops, Printers, etc. Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers.

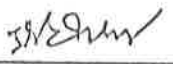
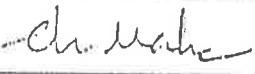
Equipment Safety Measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits. Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.

Textbooks:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

Reference Books:

1. Principles of Power Systems by V.K. Mehtha, S.Chand Technical Publishers, 2020.
2. A textbook of Electrical Technology by B.L. Theraja, S. Chand and Company, reprint edition, 2014.
3. S. K. Bhattacharya, Basic Electrical and Electronics Engineering, Second Edition, Person Publications, 2018.

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srlkanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kaklnada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar ,Dy. Manager Oil rigs BHEL , R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

PART B: BASIC ELECTRONICS ENGINEERING

UNIT I Semiconductor Devices

Introduction - Characteristics of PN Junction Diode - Zener Diode and its Characteristics. Bipolar Junction Transistor - CB, CE, CC Configurations and Characteristics.

UNIT II Basic Electronic Circuits And Instrumentation

Rectifiers and power supplies: Block diagram description of a dc power supply, working of a full wave bridge rectifier, capacitor filter (no analysis), RC Coupled amplifier.

Electronic Instrumentation: Block diagram of an electronic instrumentation system.

UNIT III Digital Electronics

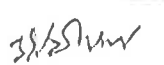
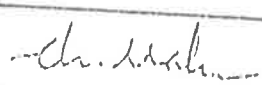
Overview of binary number system, BCD codes, Excess-3 code. Boolean Algebra, Basic Theorems and properties of Boolean Algebra, Truth Tables and simple Logic Gates including Universal Gates - AND, OR, NOT, NOR, NAND, XOR and XNOR. Simple combinational circuits - Half and Full Adders.

Textbooks:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. Switching Theory and Logic Design by A. Anand Kumar, PHI Learning, 3rd Edition.

Reference Books:

1. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
2. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
3. R. T. Paynter, Introductory Electronic Devices & Circuits - Conventional Flow Version, Pearson Education, 2009.

No.	Members	Name & Institution	Signature of member
	Chairman	Dr. S. Srikanth, Professor & HOD	
	University Nominee	Dr. T. Murali Mohan, Professor, Dept. of BEE, UCEK, JNTU Kakinada	
	Subject expert from outside the college	Dr. K. Siva Kumar, Professor, Dept. of EE, IIT Hyderabad	
	Subject expert from outside the college	Dr. G. Siva Kumar, Asst. professor, Dept. of EE, NIT Warangal	
	Representative from Industry	Ch. Mahadev Kumar, Dy. Manager Oil rigs BHEL, R C Puram Hyderabad	
	Alumni Member	D. Lakshman Kumar, Asst. professor, Dept. of BEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

BR23 I I - MEC - 5

7

I Year - I Semester	Code: 23ES1T04	L	T	P	C
		3	0	0	3
INTRODUCTION TO PROGRAMMING (Common to All branches of Engineering)					
Course Objectives: - To introduce students to the fundamentals of computer programming. - To provide hands-on experience with coding and debugging. - To foster logical thinking and problem-solving skills using programming. - To familiarize students with programming concepts such as data types, control structures, functions, and arrays. - To encourage collaborative learning and teamwork in coding projects.					
Course Outcomes: A student after completion of the course will be able to CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking. CO2: Analyze a problem and develop an algorithm to solve it. CO3: Implement various algorithms using the C programming language. CO4: Understand more advanced features of C language. CO5: Develop problem-solving skills and the ability to debug and optimize the code					
UNIT-I: Introduction to Programming and Problem Solving: Computer System: History of Computers, Introduction to Components of Computer System, compilation and execution, Program Counter Basics of a Computer Program- Programming Languages and History of C, Basics Structure of a Computer Program, Software Development Process: Characteristics Algorithm, Flowchart, Pseudo Code, Header file, Errors in compilation time, Primitive Data Types, Formatted I/O's, Format Modifiers. Variable Rules, Keywords, Constants, String and Operators. Type Conversions, Priority Table Problemsolving strategies: Top-down and Bottom-up approach, Time and space complexities.					
UNIT -II: Control Structures (Flow of Controls): Decision Branching Statement (Selection): Two-way selection: if, if-else, nested if Multi-way selection: switch, else-if ladder Decision Looping Statement (Repetition/Iterative): while (Pretest/Condition-Controlled Loops) and do-while (Post test) Loops, for loop (Counter Controlled) and Unconditional statements, Nested Loops					
UNIT-III Arrays & Pointers: Arrays: Arrays definition and indexing, Types of Arrays One-Dimensional Arrays: Initialization, declaration and accessing, input and output of array Two-Dimensional Arrays: Initialization, declaration, accessing, input and output of array Case Study: Matrices, Larger Dimensional Arrays Pointers: Concept of a pointer, Initialization of pointer variables and access, Pointer dereferencing and address operators, array manipulation using pointers, Dynamic Memory Management functions, pointers to pointers, command line arguments					

H.R. - <i>Dr. N</i>	online	online	online	online	<i>Dr. B S N</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

Professor
Department of CSE

UNIT-IV: Functions & Strings:

Functions: Definition of Function, Categorization of User define functions, Local, Global variables and Actual and Formal parameters, Scope life time variables, pass by value and reference, Recursive function Case Study: Factorial, Fibonacci Series, Basics of Sorting/and Searching

Strings: Introduction to String, String Handling Functions

UNIT-V: User Defined Data Types & File Handling:

User Defined Data Types: Structures: declaration, Initialization, accessing, nested structures, self-referential structure, structures to array, pointer and functions, Union, typedef and enum

File Handling: Basics of File Handling (only if time is available, otherwise should be done as part of the lab).

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, Second Edition 2015.
2. Schaum's Outline of Programming with C, Byron S. Gottfried, McGraw-Hill, Second Edition.
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1. Computing fundamentals and C Programming, E Balagurusamy, McGraw- Hill Education.
2. Programming in C, Rema Tharaja, Oxford, 2016, 2nd edition
3. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage
4. C Programming- A Beginners Guide by Prof. Mangesh, Dr. D R Shashirag, Prof. Bodapati Narasimha Rao, Prof. B P N Madhu Kumar.

H-R-lic	online	online	online	online	professors
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

Department of CSE
University College of Engg.
JNTUK Kakinada.

COMMUNICATIVE ENGLISH LAB

(Common to all branches)

(23HM1201) ✓
L T P C
- - 2 1

COURSE CODE :- ✓

23HM1201 (EE, ME, ECE, EEE) -

23HS2201 (CSE, AIDS, ATML, CSE (AI-M)) -

OBJECTIVES

The main objective of introducing this course, *Communicative English Laboratory*, is to expose the students to a variety of self-instructional, learner friendly modes of language learning students will get trained in the basic communication skills and also make them ready to face job interviews.

OUT COMES

CO 1: Understand the different aspects of the English language proficiency with emphasis on LSRW skills.

CO 2: Apply communication skills through various language learning activities.

CO3: Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.

CO4: Evaluate and exhibit professionalism in participating in debates and group discussions.

CO5: Create effective resonance and prepare themselves to face interviews in future.

List of Topics:

1. Vowels & Consonants
2. Neutralization/Accent Rules
3. Communication Skills & JAM
4. Role Play of Conversational Practice
5. E-mail Writing
6. Resume Writing, Cover letter, SOP
7. Group Discussions-methods & practice
8. Debates- Methods & Practice
9. PPT Presentations/ Poster Presentation
10. Interview Skills

A.D. Madhuri
(Chairman-BOS)

Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)

Dr. D. Aseesh Babu
(Subject Expert)

Dr. A. Nageswara Rao
(Member of BOS)

Lab Software: Globarena Technologies Ltd.,

Reference Books:

1. Meenakshi Raman, Sangeeta-Sharma. Technical Communication. Oxford Press.2018.
2. Grant Taylor: English Conversation Practice, Tata McGraw-Hill Education India,2016
3. Hewing's, Martin. Cambridge Academic English (B2). CUP, 2012.
4. T.Balasubramanyam, A Textbook of English Phonetics for Indian Students,(3rd Ed) Trinity Press.

Web Resources:

Spoken English:

1. www.esl-lab.com
2. www.englishmedialab.com
3. www.englishinteractive.net
4. <https://www.britishcouncil.in/english/online>
5. <http://www.letstalkpodcast.com/>
6. https://www.youtube.com/c/mmmEnglish_Emma/featured
7. <https://www.youtube.com/c/ArnelsEverydayEnglish/featured>
8. <https://www.youtube.com/c/engvidAdam/featured>
9. <https://www.youtube.com/c/EnglishClass101/featured>
10. <https://www.youtube.com/c/SpeakEnglishWithTiffani/playlists>
11. https://www.youtube.com/channel/UCV1h_cBE0Drdx19qkTM0WNw

Voice & Accent:

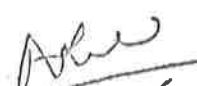
1. <https://www.youtube.com/user/letstalkaccent/videos>
2. <https://www.youtube.com/c/EngLanguageClub/featured>
3. https://www.youtube.com/channel/UC_OskgZBoS4dAnVUpJVexc
4. https://www.youtube.com/channel/UCNfm92h83W2I2Ic5Xwp_IA


A.D. Madhuri
(Charman-BOS)


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(Subject Expert)


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(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

BR23 I-I-MEC-7

L T P C
0 0 2 1

ENGINEERING PHYSICS LAB
(Common to All Branches of Engineering)

Course Objectives:

To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes: The students will be able to

- Operate optical instruments like travelling microscope and spectrometer.
- Estimate the wavelengths of different colors using diffraction grating.
- Plot the intensity of the magnetic field of circular coil carrying current with distance.
- Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively.
- Calculate the band gap of a given semiconductor
- Identify the type of semiconductor using Hall Effect.
- Identify the different types of semiconductor diodes and their applications.
- Analyse the experimental data on Planck's constant and compare it to theoretical predictions.

List of Experiments:

1. Determination of radius of curvature of a given planoconvex lens by Newton's rings.
2. Determination of wavelengths of different spectral lines in mercury spectrum using diffraction grating in normal incidence configuration.
3. Verification of Brewster's law
4. Determination of dielectric constant using charging and discharging method.
5. Study the variation of B versus H by magnetizing the magnetic material ($B-H$ curve).
6. Determination of wavelength of Laser light using diffraction grating.
7. Estimation of Planck's constant using photoelectric effect.
8. Determination of the resistivity of semiconductors by four probe methods.
9. Determination of energy gap of a semiconductor using p-n junction diode.
10. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.

Ms. A.D. Madhuri
(Chairperson - BOS)

Dr. G. Padmaja Rani
(University Nominee)

Dr. T.N.K.V. Prasad
(Subject Expert)

K. Mohan Kant
Dr. K. Mohankant
(Subject Expert)

Mr. S.T. Naidu
(Member, BOS)

(Signature)

ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

(4)

(Common to All branches of Engineering)

Subject Code: 23ES1L01

~~Subject Code: 23ES2L01~~

Course Objectives:

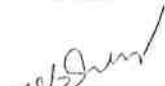
- To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.
- To impart knowledge on the principles of digital electronics and fundamentals of electron devices.

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

- Get an exposure to common electrical & electronic components and their ratings.
- Understand the usage of common electrical & electronic measuring instruments.
- Understand the basic characteristics of electrical machines and perform energy calculations.
- Plot and discuss the characteristics of various electron devices.
- Explain the operation of a digital circuit.

Activities:

- Familiarization of commonly used Electrical & Electronic Workshop Tools: Bread board, Solder, cables, relays, switches, connectors, fuses, Cutter, plier, screwdriver set, wirestripper, flux, knife/blade, soldering iron, de-soldering pump etc.
Provide some exercises so that hardware tools and instruments are learned to be used by the students.
- Familiarization of Measuring Instruments like Voltmeters, Ammeters, multimeter, LCR-Q meter, Power Supplies, CRO, DSO, Function Generator, Frequency counter.
Provide some exercises so that measuring instruments are learned to be used by the students.
- Components:
 - Familiarization/Identification of components (Resistors, Capacitors, Inductors, Diodes, transistors, IC's etc.) – Functionality, type, size, colour coding package, symbol, cost etc.
 - Testing of components like Resistor, Capacitor, Diode, Transistor, ICs etc. - Compare values of components like resistors, inductors, capacitors etc with the measured values by using instrument.

					
Dr. S. Srikanth Professor & HOD	Dr. T. Murali Mohan, University Nominee**	Dr. K. Siva Kumar Subject expert	Dr. G. Siva Kumar Subject expert	Ch. Mahadev Kumar Representative from Industry	D. Lakshman Kumar Alumni Member

PART A: BASIC ELECTRICAL ENGINEERING LAB

List of experiments:

(Any 5 of the following experiments are to be conducted)

1. Verification of KCL and KVL
2. Verification of Superposition theorem
3. Measurement of Resistance using Wheat stone bridge
4. O.C & S.C Characteristics of Single Phase Transformer
5. Measurement of Power and Power factor using Single-phase wattmeter
6. Measurement of Earth Resistance using Megger
7. Calculation of Electrical Energy for Domestic Premises

References:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

PART B: BASIC ELECTRONICS ENGINEERING LAB

List of Experiments:

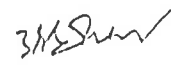
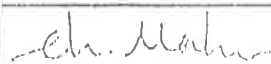
(Any 5 of the following experiments are to be conducted)

1. Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.
2. Plot V – I characteristics of Zener Diode and its application as voltage Regulator.
3. Implementation of half wave with and without filter.
4. Implementation of full wave rectifier with and without filter.
5. Plot Input & Output characteristics of BJT in CE configuration.
6. Plot Input & Output characteristics of BJT in CB configuration.
7. Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs.

Tools / Equipment Required: DC Power supplies, Multi meters, DC Ammeters, DC Voltmeters, AC Voltmeters, CROs, all the required active devices.

References:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srikanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kakinada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar , Dy. Manager Oil rigs BHEL , R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

I Year - I Semester	Code: 23ES1L04	L	T	P	C
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COMPUTER PROGRAMMING LAB
(Common to All branches)

Course Objectives:

The course aims to give students hands-on experience and train them on the concepts of the C programming language.

Course Outcomes:

CO1: Read, understand, and trace the execution of programs written in C language.

CO2: Select the right control structure for solving the problem.

CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers.

CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.

UNIT I

WEEK 1:

Objective: Getting familiar with the programming environment on the computer and writing the first program.

Suggested Experiments/Activities:

Tutorial 1: Problem-solving using Computers.

Lab 1: Familiarization with programming environment

- i) Basic Linux environment and its editors like Vi, Vim & Emacs etc.
- ii) Exposure to Turbo C, gcc
- iii) Writing simple programs using printf(), scanf()

WEEK 2:

Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation.

Suggested Experiments /Activities:

Tutorial 2: Problem-solving using Algorithms and Flow charts.

Lab 2: Converting algorithms/flow charts into C Source code.

Developing the algorithms/flowcharts for the following sample programs

- i) Sum and average of 3 numbers
- ii) Conversion of Fahrenheit to Celsius and vice versa
- ii) Simple interest calculation

WEEK 3:

Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants.

Suggested Experiments/Activities:

Tutorial 3: Variable types and type conversions:

Lab 3: Simple computational problems using arithmetic expressions.

- i) Finding the square root of a given number
- ii) Finding compound interest
- iii) Area of a triangle using heron's formulae
- iv) Distance travelled by an object

<i>Dr. N</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor of CSE					

UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial 4: Operators and the precedence and as associativity:

Lab4: Simple computational problems using the operator' precedence and associativity

i) Evaluate the following expressions.

a. $A+B*C+(D*E) + F*G$

b. $A/B*C-B+A*D/3$

c. $A+++B---A$

d. $J=(i++) + (++i)$

ii) Find the maximum of three numbers using conditional operator

iii) Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5:

Objective: Explore the full scope of different variants of "if construct" namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

i) Write a C program to find the max and min of four numbers using if-else.

ii) Write a C program to generate electricity bill.

iii) Find the roots of the quadratic equation.

iv) Write a C program to simulate a calculator using switch case.

v) Write a C program to find the given year is a leap year or not.

WEEK 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

i) Find the factorial of given number using any loop.

ii) Find the given number is a prime or not.

iii) Compute sine and cos series

iv) Checking a number palindrome

v) Construct a pyramid of numbers.

<i>N.R. ...</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>programming</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kalinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- Find the min and max of a 1-D integer array.
- Perform linear search on 1D array.
- The reverse of a 1D integer array
- Find 2's complement of the given binary number.
- Eliminate duplicate elements in an array.

WEEK 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting

Lab 8: Matrix problems, String operations, Bubble sort

- Addition of two matrices
- Multiplication two matrices
- Sort array elements using bubble sort

WEEK 9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 9: Pointers and dynamic memory allocation

Lab 9: Pointers and memory dereference.

- Write a C program to find the sum of a 1D array using malloc ()
- Enter n students data using calloc () and display failed students list
- Write a C program to implement realloc ()

<i>N. R. S. S. S.</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT IV

WEEK 10:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

Tutorial 10: Functions, call by value, scope and extent,

Lab 10: Simple functions using call by value, solving differential equations using Euler's theorem.

- i) Concatenate two strings without built-in functions
- ii) Reverse a string using built-in and without built-in string functions
- iii) Write a C function to find the length of a string.
- iv) Write a C function to transpose of a matrix.
- v) Write a C function to demonstrate numerical integration of differential equations using Euler's method

WEEK 11:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions.

Suggested Experiments/Activities:

Tutorial 11: Recursion, recursive calls

Lab 11: Recursive functions

- i) Write a recursive function to generate Fibonacci series.
- ii) Write a recursive function to find the lcm of two numbers.
- iii) Write a recursive function to find the factorial of a number.
- iv) Write a C Program to implement Ackermann function using recursion.
- v) Write a recursive function to find the sum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 12: Call by reference, dangling pointers

Lab 12: Simple functions using Call by reference, Dangling pointers.

- i) Write a C program to swap two numbers using call by reference.
- ii) Demonstrate Dangling pointer problem using a C program.
- iii) Write a C program to copy one string into another using pointer.
- iv) Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

K-R	online	online	online	online	gammuthy
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada. Professor Department of CSE	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT V

WEEK 13:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 13: Structure, Bitfields, Self-Referential Structures, Linked lists

Lab 13: Structure, Self-Referential Structures, Bitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields

- Write a C program to find the total, average of n students using structures
- Read student name and marks from the command line and display the student details along with the total.
- Create and display a singly linked list using self-referential structure.
- Demonstrate the differences between structures and unions using a C program.
- Write a C program to shift/rotate using bitfields.
- Write a C program to copy one structure variable to another structure of the same type.

WEEK 14:

Objective: To understand data files and file handling with various file I/O functions.

Explore the differences between text and binary files.

Suggested Experiments/Activities:

Tutorial 14: File handling

Lab 14: File operations

- Write a C program to write and read text into a file.
- Write a C program to write and read text into a binary file using fread() and fwrite()
- Copy the contents of one file to another file.
- Write a C program to merge two files into the third file using command-line arguments.
- Find no. of lines, words and characters in a file
- Write a C program to print last n characters of a given file.

Text Books:

- Programming in C - A practical approach by Ajay Mittal, Pearson Education, First Edition.
- Schaum's Outline of Programming with C by Byron S. Gottfried, McGraw Hill, Second Edition.

Reference Books:

- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India
- C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

N. R. Ravi	online	online	online	online	programming
Dr. N. Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada. Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B. S. N. Murthy, Professor of CSE, BVCEC.

Department of CSE
JNTUK Kakinada.

BR23-I-I-MEC-10

L	T	P	C
0	0	1	0.5

HEALTH AND WELLNESS, YOGA AND SPORTS

(Common to All branches of Engineering)

3

23BS1L04(CS,EEE,MEC,EEET)

23BS2L04((CSE,AIDS,AIIML,CSE(AIIML))

Course Objectives:

The main objective of introducing this course is to make the students maintain their mental and physical wellness by balancing emotions in their life. It mainly enhances the essential traits required for the development of the personality.

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

- CO1: Understand the importance of yoga and sports for Physical fitness and sound health.
- CO2: Demonstrate an understanding of health-related fitness components.
- CO3: Compare and contrast various activities that help enhance their health.
- CO4: Assess current personal fitness levels.
- CO5: Develop Positive Personality

UNIT I

Concept of health and fitness, Nutrition and Balanced diet, basic concept of Immunity Relationship between diet and fitness, Globalization and its impact on health, Body Mass Index(BMI) of all age groups.

Activities:

- I) Organizing health awareness programmes in community
- II) Preparation of health profile
- III) Preparation of chart for balance diet for all age groups

Mrs.A.D. Madhuri
(Chairperson -JOS)

Dr.O.Shyam Kumar
(University Nominee)

T Durga Rao
(M P Ed)

K Sathyanarayana
(M P Ed)

28

Reference Books:

1. Gordon Edlin, Eric Golanty. Health and Wellness, 14th Edn. Jones & Bartlett Learning, 2022
2. T.K.V.Desikachar. The Heart of Yoga: Developing a Personal Practice
3. Archie J.Bahm. Yoga Sutras of Patanjali, Jain Publishing Company, 1993
4. Wiseman, John Lofty, SAS Survival Handbook: The Ultimate Guide to Surviving Anywhere Third Edition, William Morrow Paperbacks, 2014
5. The Sports Rules Book/ Human Kinetics with Thomas Hanlon. -- 3rd ed. Human Kinetics, Inc. 2014

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities of Health/Sports/Yoga.
2. Institutes must provide field/facility and offer the minimum of five choices of as many as Games/Sports.
3. Institutes are required to provide sports instructor / yoga teacher to mentor the students.

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.

Mrs. A.D. Madhuri
(Chairperson - BOS)

Dr. G. Shyam Kumar
(University Nominee)

T Durga Rao
(M P Ed)

K Satyanarayana
(B P Ed)

UNIT II

Concept of yoga, need for and importance of yoga, origin and history of yoga in Indian context, classification of yoga, Physiological effects of Asanas- Pranayama and meditation, stress management and yoga, Mental health and yoga practice.

Activities:

Yoga practices - Asana, Kriya, Mudra, Bandha, Dhyana, Surya Namaskar

UNIT III

Concept of Sports and fitness, importance, fitness components, history of sports, Ancient and Modern Olympics, Asian games and Commonwealth games.

Activities:

- I Participation in one major game and one individual sport viz., Athletics, Volleyball, Basketball, Handball, Football, Badminton, Kabaddi, Kho-kho, Table tennis, Cricket etc.
Practicing general and specific warm up, aerobics
- II Practicing cardiorespiratory fitness, treadmill, run test, 9 min walk, skipping and running.


Mr. A.D. Madhuri
(Chairperson - BOS)


Dr. G. Sivan Kumar
(University Nominee)


T. Durga Rao
(M.P. Ed.)


K. Satyanarayana
(B.P. Ed.)

BR23
I-I
ECE

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE (A)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
Course structure for the A.Y 2023-2024 (BR23 Regulations)

I B.Tech. - I Semester

S.No.	Course Code	Category of course	Subjects	L	T	P	C
1	23HM1T01	HM	Communicative English	2	0	0	2
2	23BS1T01	BS	Linear Algebra & Calculus	3	0	0	3
3	23BS1T02	BS	Engineering Physics	3	0	0	3
4	23ES1T02	ES	Basic Electrical & Electronics Engineering	3	0	0	3
5	23ES1T04	ES	Introduction to Programming	3	0	0	3
6	23HM1L01	HM	Communicative English Lab	0	0	2	1
7	23BS1L01	BS	Engineering Physics Lab	0	0	2	1
8	23ES1L01	ES	Electrical & Electronics Engineering Workshop	0	0	3	1.5
9	23ES1L04	ES	Computer Programming Lab	0	0	3	1.5
10	23BS1L04	BS	Health & Wellness, Yoga & Sports	0	0	1	0.5
Total credits							19.5

I B.Tech. - II Semester

S.No.	Course Code	Category of course	Subjects	L	T	P	C
1	23BS2T03	BS	Chemistry	3	0	0	3
2	23BS2T01	BS	Differential Equations & Vector Calculus	3	0	0	3
3	23ES2T01	ES	Basic Civil & Mechanical Engineering	3	0	0	3
4	23ES2T03	ES	Engineering Graphics	1	0	4	3
5	23EE2T02	PC	Network Analysis	3	0	0	3
6	23BS2L02	BS	Chemistry Lab	0	0	2	1
7	23ES2L02	ES	Engineering Workshop	0	0	3	1.5
8	23ES2L03	ES	IT Workshop	0	0	2	1.0
9	23EE2L02	PC	Network Analysis & Simulation Laboratory	0	0	3	1.5
10	23BS2L05	BS	NSS/NCC/Scouts & Guides/Community Service	0	0	1	0.5
Total credits							20.5

Pages ① To ③①
 verified
 21/03/2024

Dept of Science and Humanities
 BVC Engineering College
 Odalarevu - 533 210

PRAVIN AKULA
 Professor,
 Department of E.C.E.
 B.V.C. Engg College
 ODALAREVU - 533 210

COMMUNICATIVE ENGLISH (Common to all branches)

L	T	P	C
2	-	-	2

COURSE CODE:

23HM1T01 (CE, ME, ECE, EEE)

23HH2T01 (CSE, AIO, AIHL, ESECATHL)

Introduction

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering. As far as the detailed textbooks are concerned, the focus should be on the skills of listening, speaking, reading and writing.

Course Objectives:

The main objective of introducing this course, *communicative English*, is to facilitate effective listening, Reading, Speaking and Writing skills among the students.

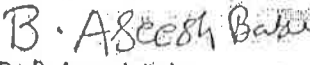
It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary.

This course helps the students to make them effective in speaking and writing skills and to make them Industry-ready.


A.D. Madhuri
(Chairman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

LISTENING SKILLS:

Objectives:

1. To enable the students to appreciate the role of listening skill and improve their pronunciation.
2. To enable the students to comprehend the speech of people belonging to different backgrounds and regions.
3. To enable the students to listen for general content, to fill up information and for specific information.

SPEAKING SKILLS:

Objectives:

1. To make the students aware of the importance of speaking for their personal and professional communication.
2. To enable the students to express themselves fluently and accurately in social and professional success.
3. To help the students describe objects, situations and people.
4. To make the students participate in group activities like role-plays, discussions and debates.
5. To make the students participate in just a minute talks.

READING SKILLS:

Objectives:

1. To enable the students to comprehend a text through silent reading.
2. To enable the students to guess the meanings of words, messages and inferences of texts in given contexts.
3. To enable the students to skim and scan a text.
4. To enable the students to identify the topic sentence.
5. To enable the students to identify discourse features.
6. To enable the students to make intensive and extensive reading.

WRITING SKILLS:

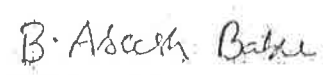
Objectives:

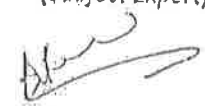
1. To make the students understand that writing is an exact formal skills.
2. To enable the students to write sentences, paragraphs, e-mails and essays.
3. To make the students identify and use appropriate vocabulary.
4. To enable the students to narrate and describe.
5. To enable the students to write coherently and cohesively.


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(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

Course Outcomes:

At the end of the Course, Student will be able to:

- CO 1: Understand the context, topic and pieces of specific information from social or transactional dialogues.
- CO 2: Apply grammatical structures to formulate sentences and correct word forms.
- CO 3: Analyze discourse markers to speak clearly on a specific topic in informal discussions.
- CO 4: Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.
- CO 5: Create a coherent paragraph, essay, and resume.

Methodology:

1. The class is to be learner-centred where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

Recommended Topics:

UNIT-I

Lesson: HUMAN VALUES: Gift of Magi (Short Story)

- Listening: Identifying the topic, the context and specific pieces of information by listening to short audio texts and answering a series of questions.
- Speaking: Asking and answering general questions on familiar topics such as home, family, work, studies and interests; Introducing oneself and others.
- Reading: Skimming to get the main idea of a text; scanning to look for specific pieces of information.
- Writing: Mechanics of Writing-Capitalization, Spellings, Punctuation-Parts of Sentences.
- Grammar: Parts of Speech, Basic Sentence Structures-forming questions
- Vocabulary: Synonyms, Antonyms, Affixes (Prefixes/Suffixes), Root words.

UNIT-II

Lesson: NATURE: The Brook by Alfred Tennyson (Poem)

- Listening: Answering a series of questions about main ideas and supporting ideas after listening to audio texts.
- Speaking: Discussion in pairs/small groups on specific topics followed by short structured talks.

Reading: Identifying sequence of ideas; recognizing verbal techniques that help to link the ideas in a paragraph together.
Writing: Structure of a paragraph - Paragraph writing (specific topics)
Grammar: Cohesive devices -linkers, use of articles and zero article; prepositions.
Vocabulary: Homonyms, Homophones, Homographs.

UNIT-III

Lesson: BIOGRAPHY: Elon Musk

Listening: Listening for global comprehension and summarizing what is listened to.
Speaking: Discussing specific topics in pairs or small groups and reporting what is discussed
Reading: Reading a text in detail by making basic inferences-recognizing and interpreting specific context clues; strategies to use text clues for comprehension.
Writing: Summarizing, Note-making, paraphrasing
Grammar: Verbs - tenses; subject-verb agreement;
Vocabulary: Compound words, Collocations

UNIT-IV

Lesson: INSPIRATION: The Toys of Peace by Sakl

Listening: Making predictions while listening to conversations/ transactional dialogues without video; listening with video.
Speaking: Role plays for practice of conversational English in academic contexts (formal and informal) - asking for and giving information/directions.
Reading: Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships, and communicate processes or display complicated
Writing: Letter Writing: Official Letters, Resumes
Grammar: Reporting verbs, Direct & Indirect speech, Active & Passive Voice
Vocabulary: Words often confused

UNIT-V

Lesson: MOTIVATION: The Power of Intrapersonal Communication (An Essay)

Listening: Identifying key terms, understanding concepts and answering a series of relevant questions that test comprehension.
Speaking: Formal oral presentations on topics from academic contexts
Reading: Reading comprehension.
Writing: Writing structured essays on specific topics.
Grammar: Editing short texts -identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject verb agreement)
Vocabulary: Technical Jargons
Textbooks:

1. Pathfinder: Communicative English for Undergraduate Students, 1st Edition, Orient Black Swan, 2023 (Units 1,2 & 3)

2. Empowering English by Cengage Publications, 2023 (Units 4 & 5)

Reference Books:

1. Dubey, Sham Ji & Co. English for Engineers, Vikas Publishers, 2020
2. Bailey, Stephen. Academic writing: A Handbook for International Students. Routledge, 2014.
3. Murphy, Raymond. English Grammar in Use, Fourth Edition, Cambridge University Press, 2019.
4. Lewis, Norman. Word Power Made Easy- The Complete Handbook for Building a Superior Vocabulary. Anchor, 2014.

Web Resources:

GRAMMAR:

1. www.bbc.co.uk/learningenglish
2. <https://dictionary.cambridge.org/grammar/british-grammar/>
3. www.eslpod.com/index.html
4. <https://www.learngrammar.net/>
5. <https://english4today.com/english-grammar-online-with-quizzes/>
6. <https://www.talkenglish.com/grammar/grammar.aspx>

VOCABULARY

1. <https://www.youtube.com/c/DailyVideoVocabulary/videos>
2. https://www.youtube.com/channel/UC4emBAIt8I_NJZE8qK8sfpA


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I B.TECH.I SEMESTER

LINEAR ALGEBRA AND CALCULUS

Course Code: 23BSIT01

(for all)

L	T	P	C
3	0	0	3

Course Objectives:

- To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

Course Outcomes:

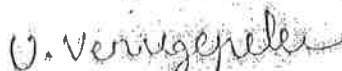
At the end of the course, the student will be able to

- CO1: Develop and use of matrix algebra techniques that are needed by engineers for practical applications.
- CO2: Utilize mean value theorems to real life problems.
- CO3: Familiarize with functions of several variables which is useful in optimization.
- CO4: Learn important tools of calculus in higher dimensions.
- CO5: Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshitulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

(7)

UNIT I:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form. Finding two Non Singular matrices when PAQ is in Normal form. Cauchy-Binet formulac(without proof). Inverse of Non- singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method, Electrical Circuits(Application).

UNIT II:- Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, 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.

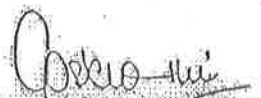
UNIT III:- Calculus

Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems on the above theorems.

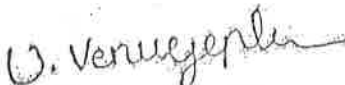
UNIT IV:- Partial differentiation and Applications (Multi variable calculus)

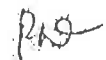
Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshitulu
(University Nominee)


Dr. T.S.R. Muthy
(Subject Expert)


Dr. U. Venu Gopalani
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

UNIT V:- Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals)

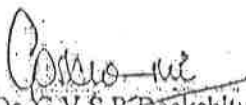
Textbooks:-

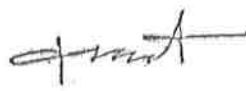
1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

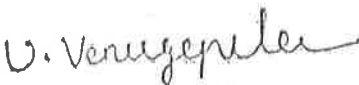
Reference Books:-

1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Michael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshittulu
(University Nominee)


Dr. T.S.R. Murti
(Subject Expert)


Dr. U. Venu Gopalani
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

(9)

BR23-I-I-ECE
Course Code: 23BS1T02 (CIV, MEC, ECE & EEE)
23BS2T02 (CSE, AIDS, AIML & GSM)

L T P C
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ENGINEERING PHYSICS
(Common for all branches of Engineering)

Course Objectives:

To bridge the gap between the Physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc., enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

Course Outcomes:

- Analyse the intensity variation of light due to polarization, interference and diffraction.
- Familiarize with the basics of crystals and their structures.
- Summarize various types of polarization of dielectrics and classify the magnetic materials.
- Explain fundamentals of quantum mechanics and apply to one dimensional motion of particles.
- Identify the type of semiconductor using Hall Effect.

UNIT I Wave Optics

8hrs

Interference: Introduction - Principle of superposition - Interference of light - Interference in thin films (Reflection Geometry) & applications - Colors in thin films - Newton's Rings - Determination of wavelength and refractive index.

Diffraction & Polarisation:

Diffraction: Introduction - Fresnel and Fraunhofer diffractions - Fraunhofer diffraction due to single slit, double slit & N-slits (Qualitative) - Diffraction Grating - Dispersive power and resolving power of Grating (Qualitative).

Polarization: Introduction - Types of polarization - Polarization by reflection, refraction and Double refraction - Nicol's Prism - Half wave and Quarter wave plates

UNIT II Crystallography and X-ray diffraction

8hrs

Crystallography: Space lattice, Basis, Unit Cell and lattice parameters - Bravais Lattices - crystal systems (3D) - coordination number - packing fraction of SC, BCC & FCC - Miller indices - separation between successive (hkl) planes.

X-ray diffraction: Bragg's law - X-ray Diffractometer - crystal structure determination by Laue's and powder methods.

A.D. Madhuri
(Chairperson - BOS)

K. Mohan Kant
Dr. K. Mohan kant
(Subject Expert)

Dr. G. Padmaja Rani
(University Nominee)

Mr. S. T. Naidu
(Member, BOS)

Dr. T. N. K. V Prasad
(Subject Expert)

10

UNIT III Dielectric and Magnetic Materials

Dielectric Materials: Introduction - Dielectric polarization - Dielectric polarizability, Susceptibility, Dielectric constant and Displacement Vector - Relation between the electric vectors - Types of polarizations- Electronic (Quantitative), Ionic (Quantitative) and Orientation polarizations (Qualitative) - Lorentz internal field - Clausius- Mossotti equation- complex dielectric constant - Frequency dependence of polarization - dielectric loss

Magnetic Materials: Introduction - Magnetic dipole moment - Magnetization-Magnetic susceptibility and permeability - Atomic origin of magnetism - Classification of magnetic materials: Dia, para, Ferro, anti-ferro & Ferri magnetic materials - Domain concept of Ferromagnetism & Domain walls (Qualitative) - Hysteresis - soft and hard magnetic materials.

UNIT IV Quantum Mechanics and Free electron theory

7hrs

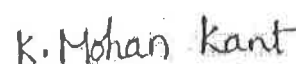
Quantum Mechanics: Dual nature of matter - Heisenberg's Uncertainty Principle - Significance and properties of wave function - Schrodinger's time independent and dependent wave equations- Particle in a one-dimensional infinite potential well.

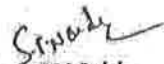
Free Electron Theory: Classical free electron theory (Qualitative with discussion of merits and demerits) - Quantum free electron theory - electrical conductivity based on quantum free electron theory - Fermi-Dirac distribution - Density of states - Fermi energy.


A.D. Madhuri
(Chairperson -BOS)


Dr. G. Padmaja Rani
(University Nominee)


Dr. T.N.K.V. Prasad
(Subject Expert)


Dr. K. Mohan Kant
(Subject Expert)


Mr. S.T. Naidu
(Member, BOS)

UNIT V Semiconductors:

Semiconductors: Formation of energy bands- classification of crystalline solids - Intrinsic semiconductors: Density of charge carriers - Electrical conductivity - Fermi level - Extrinsic semiconductors - density of charge carriers - dependence of Fermi energy on carrier concentration and temperature - Drift and diffusion currents - Einstein's equation - Hall effect and its applications.

Textbooks:

1. A Text book of Engineering Physics - M. N. Avadhanulu, P.G.Kshirsagar & TVS Arun Murthy, S.Chand Publications, 11th Edition 2019, P.K.Palanasami.
2. Engineering Physics - D.K.Bhattacharya and Poonam Tandon, Oxford press (2015).

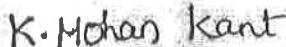
Reference Books:

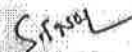
1. Engineering Physics - B.K. Pandey and S. Chaturvedi, Cengage Learning
2. Engineering Physics - Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics - Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press.
4. Engineering Physics - M.R. Srinivasan, New Age international publishers (2009).


A.D. Madhuri
(Chairperson -BOS)


Dr.G.Padmaja Rani
(University Nominee)


Dr.T.N.K.V Prasad
(Subject Expert)


Dr. K.Mohan kant
(Subject Expert)


Mr. S.T.Naidu
(Member, BOS)

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to all branches of engineering)

Subject Code: 23ES1T02

~~Subject Code: 23ES2T02~~

Course Objectives

To expose to the field of Electrical & Electronics Engineering, laws and principles of electrical/electronic engineering and to acquire fundamental knowledge in the relevant field.

Course Outcomes: After the completion of the course students will be able to

- Understand the basic electrical circuits, AC machines.
- Analyze different electrical circuits, performance of AC machines.
- Explain the theory, construction, and operation of electronic devices.
- Apply the concept of science and mathematics to explain the working of diodes, transistors, and their applications.
- Analyze different number systems and logic gates.

PART A: BASIC ELECTRICAL ENGINEERING

UNIT I DC & AC Circuits

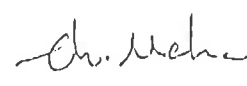
DC Circuits: Electrical circuit elements (R, L and C), Ohm's Law and its limitations, KCL & KVL, series, parallel, series-parallel circuits, Super Position theorem, Simple numerical problems.

AC Circuits: A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor (for sine wave), Voltage and current relationship with phasor diagrams in R, L, and C circuits, Concept of Impedance, Active power, reactive power and apparent power, Concept of power factor (Simple Numerical problems).

UNIT II Machines and Measuring Instruments

Machines: Construction, principle and operation of (i) Single Phase Transformer, (ii) Three Phase Induction Motor and (iii) Alternator, Applications of electrical machines.

Measuring Instruments: Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments and Wheat Stone bridge

					
Dr. S. Srikanth Professor & HOD	Dr. T. Murali Mohan, University Nominee	Dr. K. Siva Kumar Subject expert	Dr. G. Siva Kumar Subject expert	Ch. Mahadev Kumar Representative from Industry	D. Lakshman Kumar Alumni Member

PART B: BASIC ELECTRONICS ENGINEERING

UNIT I Semiconductor Devices

Introduction - Characteristics of PN Junction Diode - Zener Diode and its Characteristics. Bipolar Junction Transistor - CB, CE, CC Configurations and Characteristics.

UNIT II Basic Electronic Circuits And Instrumentation

Rectifiers and power supplies: Block diagram description of a dc power supply, working of a full wave bridge rectifier, capacitor filter (no analysis), RC Coupled amplifier.

Electronic Instrumentation: Block diagram of an electronic instrumentation system.

UNIT III Digital Electronics

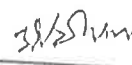
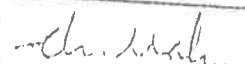
Overview of binary number system, BCD codes, Excess-3 code. Boolean Algebra, Basic Theorems and properties of Boolean Algebra, Truth Tables and simple Logic Gates including Universal Gates - AND, OR, NOT, NOR, NAND, XOR and XNOR. Simple combinational circuits - Half and Full Adders.

Textbooks:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. Switching Theory and Logic Design by A. Anand Kumar, PHI Learning, 3rd Edition.

Reference Books:

1. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
2. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
3. R. T. Paynter, Introductory Electronic Devices & Circuits - Conventional Flow Version, Pearson Education, 2009.

o. Members	Name & Institution	Signature of member
Chairman	Dr. S. Srikanth, Professor & HOD	
University Nominee	Dr. T. Murali Mohan, Professor, Dept. of EEE, UCEK, JNTU Kakinada	
Subject expert from outside the college	Dr. K. Siva Kumar, Professor, Dept. of EE, IIT Hyderabad	
Subject expert from outside the college	Dr. G. Siva Kumar, Asst. professor, Dept. of EE, NIT Warangal	
Representative from Industry	Ch. Mahadev Kumar, Dy. Manager Oil rigs BHEL, R C Puram Hyderabad	
Alumni Member	D. Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

UNIT III Energy Resources, Electricity Bill & Safety Measures

Energy Resources: Conventional and non-conventional energy resources; Layout and operation of various Power Generation systems: Hydel & Solar power generation.

Electricity bill: Power rating of household appliances including air conditioners, PCs, Laptops, Printers, etc. Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers.

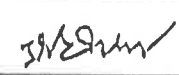
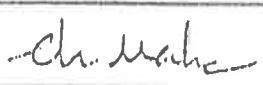
Equipment Safety Measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits. Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.

Textbooks:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

Reference Books:

1. Principles of Power Systems by V.K. Mehtha, S.Chand Technical Publishers, 2020.
2. A textbook of Electrical Technology by B.L. Theraja, S. Chand and Company, reprint edition, 2014.
3. S. K. Bhattacharya, Basic Electrical and Electronics Engineering, Second Edition, Person Publications, 2018.

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srikanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kakinada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar , Dy. Manager Oil rigs BHEL , RCPuram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WO Dist.	

I Year - I Semester	Code: 23ES1T04	L 3	T 0	P 0	C 3
INTRODUCTION TO PROGRAMMING (Common to All branches of Engineering)					
Course Objectives: - To introduce students to the fundamentals of computer programming. - To provide hands-on experience with coding and debugging. - To foster logical thinking and problem-solving skills using programming. - To familiarize students with programming concepts such as data types, control structures, functions, and arrays. - To encourage collaborative learning and teamwork in coding projects.					
Course Outcomes: A student after completion of the course will be able to CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking. CO2: Analyze a problem and develop an algorithm to solve it. CO3: Implement various algorithms using the C programming language. CO4: Understand more advanced features of C language. CO5: Develop problem-solving skills and the ability to debug and optimize the code					
UNIT-I: Introduction to Programming and Problem Solving: Computer System: History of Computers, Introduction to Components of Computer System, compilation and execution, Program Counter Basics of a Computer Program-. Programming Languages and History of C, Basics Structure of a Computer Program, Software Development Process: Characteristics Algorithm, Flowchart, Pseudo Code, Header file, Errors in compilation time, Primitive Data Types, Formatted I/O's, Format Modifiers. Variable Rules, Keywords, Constants, String and Operators. Type Conversions, Priority Table Problemsolving strategies: Top-down and Bottom-up approach, Time and space complexities.					
UNIT -II: Control Structures (Flow of Controls): Decision Branching Statement (Selection): Two-way selection: if, if-else, nested if Multi-way selection: switch, else-if ladder Decision Looping Statement (Repetition/Iterative): while (Pretest/Condition-Controlled Loops) and do-while (Post test) Loops, for loop (Counter Controlled) and Unconditional statements, Nested Loops					
UNIT-III Arrays & Pointers: Arrays: Arrays definition and indexing, Types of Arrays One-Dimensional Arrays: Initialization, declaration and accessing, input and output of array Two-Dimensional Arrays: Initialization, declaration, accessing, input and output of array Case Study: Matrices, Larger Dimensional Arrays Pointers: Concept of a pointer, Initialization of pointer variables and access, Pointer dereferencing and address operators, array manipulation using pointers, Dynamic Memory Management functions, pointers to pointers, command line arguments					

H.R. K.	online	online	online	online	g35nmmtg
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT-IV: Functions & Strings:

Functions: Definition of Function, Categorization of User define functions, Local, Global variables and Actual and Formal parameters, Scope life time variables, pass by value and reference, Recursive function

Case Study: Factorial, Fibonacci Series, Basics of Sorting and Searching

Strings: Introduction to String, String Handling Functions

UNIT-V: User Defined Data Types & File Handling:

User Defined Data Types: Structures: declaration, Initialization, accessing, nested structures, self-referential structure, structures to array, pointer and functions, Union, typedef and enum

File Handling: Basics of File Handling (only if time is available, otherwise should be done as part of the lab).

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, Second Edition 2015.
2. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill, Second Edition.
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1. Computing fundamentals and C Programming, E Balagurusamy, McGraw- Hill Education.
2. Programming in C, Rema Theraja, Oxford, 2016, 2nd edition
3. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage
4. C Programming- A Beginners Guide by Prof. Mangesh, Dr. D R Shaashirag, Prof, Bodapati Narasimha Rao, Prof. B P N Madhu Kumar.

<i>N. R. K.</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>programming</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

Department of CSE
University College of Engg.
JNTUK Kakinada.

BR23-EE-ECE-(6)

COMMUNICATIVE ENGLISH LAB

(Common to all branches)

(23HM1L01)
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COURSE CODE :-

23HS1L01 (CC, ME, ECE, EEE)

23HS2L01 (CSE, AIDS, AIHL,
CSE (AIHL))

OBJECTIVES

The main objective of introducing this course, *Communicative English Laboratory*, is to expose the students to a variety of self-instructional, learner friendly modes of language learning students will get trained in the basic communication skills and also make them ready to face job interviews.

OUT COMES

CO 1: Understand the different aspects of the English language proficiency with emphasis on LSRW skills.

CO 2: Apply communication skills through various language learning activities.

CO3: Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.

CO4: Evaluate and exhibit professionalism in participating in debates and group discussions.

CO5: Create effective resonate and prepare themselves to face interviews in future.

List of Topics:

1. Vowels & Consonants
2. Neutralization/Accent Rules
3. Communication Skills & JAM
4. Role Play or Conversational Practice
5. E-mail Writing
6. Resume Writing, Cover letter, SOP
7. Group Discussions-methods & practice
8. Debates- Methods & Practice
9. PPT Presentations/ Poster Presentation
10. Interview Skills

A. D. Madhuri
(Charman-BOS)

Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)

Dr. B. Aseesh Babu
(Subject Expert)

Dr. A. Nageswara Rao
(Member of BDS)

(18)

Lab Software: Globarena Technologies Ltd.,

Reference Books:

1. Meenakshi Raman, Sangeeta-Sharma. Technical Communication. Oxford Press.2018.
2. Grant Taylor: English Conversation Practice, Tata McGraw-Hill Education India,2016
3. Hewing's, Martin. Cambridge Academic English (B2). CUP, 2012.
4. T.Balasubramanyam, A Textbook of English Phonetics for Indian Students,(3rd Ed) Trinity Press.

Web Resources:

Spoken English:

1. www.esl-lab.com
2. www.englishmedialab.com
3. www.englishinteractive.net
4. <https://www.britishcouncil.in/english/online>
5. <http://www.letstalkpodcast.com/>
6. https://www.youtube.com/c/mmmEnglish_Emma/featured
7. <https://www.youtube.com/c/ArnelsEverydayEnglish/featured>
8. <https://www.youtube.com/c/engvidAdam/featured>
9. <https://www.youtube.com/c/EnglishClass101/featured>
10. <https://www.youtube.com/c/SpeakEnglishWithTiffani/playlists>
11. https://www.youtube.com/channel/UCV1h_cBE0Drdx19qkTM0WNw

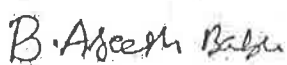
Voice & Accent:

1. <https://www.youtube.com/user/letstalkaccent/videos>
2. <https://www.youtube.com/c/EngLanguageClub/featured>
3. https://www.youtube.com/channel/UC_OskgZBoS4dAnVUgJVexc
4. https://www.youtube.com/channel/UCNfm92h83W2i2jc5Xwp_IA


A.D. Madhuri
(Charman-BOS)


Prof. K. Sree Ramesh
(University Nominee)

Prof. T. Ashok
(Subject Expert)


Dr. B. Aseesh Babu
(Subject Expert)


Dr. A. Nageswara Rao
(Member of BOS)

BR23-I-I-ECE-(7)

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ENGINEERING PHYSICS LAB
(Common to All Branches of Engineering)

Course Objectives:

To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes: The students will be able to

- Operate optical instruments like travelling microscope and spectrometer.
- Estimate the wavelengths of different colors using diffraction grating.
- Plot the intensity of the magnetic field of circular coil carrying current with distance.
- Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively.
- Calculate the band gap of a given semiconductor.
- Identify the type of semiconductor using Hall Effect.
- Identify the different types of semiconductor diodes and their applications.
- Analyse the experimental data on Planck's constant and compare it to theoretical predictions.

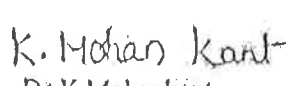
List of Experiments:

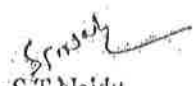
1. Determination of radius of curvature of a given planoconvex lens by Newton's rings.
2. Determination of wavelengths of different spectral lines in mercury spectrum using diffraction grating in normal incidence configuration.
3. Verification of Brewster's law.
4. Determination of dielectric constant using charging and discharging method.
5. Study the variation of B versus H by magnetizing the magnetic material (B-H curve).
6. Determination of wavelength of Laser light using diffraction grating.
7. Estimation of Planck's constant using photoelectric effect.
8. Determination of the resistivity of semiconductors by four probe methods.
9. Determination of energy gap of a semiconductor using p-n junction diode.
10. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.


Ms. A.D. Madhuri
(Chairperson - BOS)


Dr. G. Padmaja Rani
(University Nominee)


Dr. T.N.K.V. Prasad
(Subject Expert)


K. Mohan Kant
Dr. K. Mohan Kant
(Subject Expert)


Mr. S.T. Naidu
(Member, BOS)

BR23-I-I-ECE-8

L T P C
0 0 3 1.5

ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

4

(Common to All branches of Engineering)

Subject Code: 23ES1L01

~~Subject Code: 23ES2L01~~

Course Objectives:

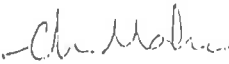
- To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.
- To impart knowledge on the principles of digital electronics and fundamentals of electron devices.

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

- Get an exposure to common electrical & electronic components and their ratings.
- Understand the usage of common electrical & electronic measuring instruments.
- Understand the basic characteristics of electrical machines and perform energy calculations.
- Plot and discuss the characteristics of various electron devices.
- Explain the operation of a digital circuit.

Activities:

- Familiarization of commonly used Electrical & Electronic Workshop Tools: Bread board, Solder, cables, relays, switches, connectors, fuses, Cutter, plier, screwdriver set, wirestripper, flux, knife/blade, soldering iron, de-soldering pump etc.
 - Provide some exercises so that hardware tools and instruments are learned to be used by the students.
- Familiarization of Measuring Instruments like Voltmeters, Ammeters, multimeter, LCR-Q meter, Power Supplies, CRO, DSO, Function Generator, Frequency counter.
 - Provide some exercises so that measuring instruments are learned to be used by the students.
- Components:
 - Familiarization/Identification of components (Resistors, Capacitors, Inductors, Diodes, transistors, IC's etc.) - Functionality, type, size, colour coding package, symbol, cost etc.
 - Testing of components like Resistor, Capacitor, Diode, Transistor, ICs etc. - Compare values of components like resistors, inductors, capacitors etc with the measured values by using instrument.

					
Dr. S. Srikanth	Dr. T. Murali Mohan,	Dr. K. Siva Kumar	Dr. G. Siva Kumar	Ch. Mahadev Kumar	D. Lakshman Kumar
Professor & HOD	University Nominee	Subject expert	Subject expert	Representative from Industry	Alumni Member

PART A: BASIC ELECTRICAL ENGINEERING LAB

List of experiments:

(Any 5 of the following experiments are to be conducted)

1. Verification of KCL and KVL
2. Verification of Superposition theorem
3. Measurement of Resistance using Wheat stone bridge
4. O.C & S.C Characteristics of Single Phase Transformer
5. Measurement of Power and Power factor using Single-phase wattmeter
6. Measurement of Earth Resistance using Megger
7. Calculation of Electrical Energy for Domestic Premises

References:

1. Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2. Basic Electrical Engineering by S. N. Singh, PHI Publishers, 2011
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI publishers, Third Edition, 2014.

PART B: BASIC ELECTRONICS ENGINEERING LAB

List of Experiments:

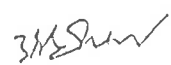
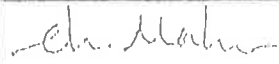
(Any 5 of the following experiments are to be conducted)

1. Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.
2. Plot V -I characteristics of Zener Diode and its application as voltage Regulator.
3. Implementation of half wave with and without filter.
4. Implementation of full wave rectifier with and without filter.
5. Plot Input & Output characteristics of BJT in CE configuration.
6. Plot Input & Output characteristics of BJT in CB configuration.
7. Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs.

Tools / Equipment Required: DC Power supplies, Multi meters, DC Ammeters, DC Voltmeters, AC Voltmeters, CROs, all the required active devices.

References:

1. R.L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009
3. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson

S.No.	Members	Name & Institution	Signature of member
1	Chairman	Dr. S.Srikanth , Professor & HOD	
2	University Nominee	Dr. T. Murali Mohan , Professor, Dept. of EEE, UCEK, JNTU Kakinada	
3	Subject expert from outside the college	Dr. K.Siva Kumar , Professor, Dept. of EE, IIT Hyderabad	
4	Subject expert from outside the college	Dr. G.Siva Kumar , Asst. professor , Dept. of EE, NIT Warangal	
5	Representative from Industry	Ch.Mahadev Kumar , Dy. Manager Oil rigs BHEL , R C Puram Hyderabad	
6	Alumni Member	D.Lakshman Kumar, Asst. professor, Dept. of EEE, Sri Vishnu Engineering College for Women(A), WG Dist.	

I Year - I Semester	Code: 23ES1L04	L	T	P	C
		0	0	3	1.5
COMPUTER PROGRAMMING LAB (Common to All branches)					
Course Objectives: The course aims to give students hands – on experience and train them on the concepts of the C programming language.					
Course Outcomes: CO1: Read, understand, and trace the execution of programs written in C language. CO2: Select the right control structure for solving the problem. CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers. CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.					
UNIT I WEEK 1: Objective: Getting familiar with the programming environment on the computer and writing the first program. Suggested Experiments/Activities: Tutorial 1: Problem-solving using Computers. Lab1: Familiarization with programming environment i) Basic Linux environment and its editors like Vi, Vim & Emacs etc. ii) Exposure to Turbo C, gcc iii) Writing simple programs using printf(), scanf()					
WEEK 2: Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation. Suggested Experiments /Activities: Tutorial 2: Problem-solving using Algorithms and Flow charts. Lab 2: Converting algorithms/flow charts into C Source code. Developing the algorithms/flowcharts for the following sample programs i) Sum and average of 3 numbers ii) Conversion of Fahrenheit to Celsius and vice versa ii) Simple interest calculation					
WEEK 3: Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants. Suggested Experiments/Activities: Tutorial 3: Variable types and type conversions: Lab 3: Simple computational problems using arithmetic expressions. i) Finding the square root of a given number ii) Finding compound interest iii) Area of a triangle using heron's formulae iv) Distance travelled by an object					

N. R. is	online	online	online	online	online
Dr. N. Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy, Professor of CSE, BVCEC.
Professor of CSE					

UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial 4: Operators and the precedence and as associativity:

Lab 4: Simple computational problems using the operator' precedence and associativity

i) Evaluate the following expressions.

a. $A+B*C+(D*E) + F*G$

b. $A/B*C-B+A*D/3$

c. $A+++B---A$

d. $J=(i++) + (++i)$

ii) Find the maximum of three numbers using conditional operator

iii) Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5:

Objective: Explore the full scope of different variants of "if construct" namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

i) Write a C program to find the max and min of four numbers using if-else.

ii) Write a C program to generate electricity bill.

iii) Find the roots of the quadratic equation.

iv) Write a C program to simulate a calculator using switch case.

v) Write a C program to find the given year is a leap year or not.

WEEK 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

i) Find the factorial of given number using any loop.

ii) Find the given number is a prime or not.

iii) Compute sine and cos series

iv) Checking a number palindrome

v) Construct a pyramid of numbers.

<i>K.R. Rao</i>	online	online	online	online	<i>Dr. B S N Murthy</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIMI), CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- Find the min and max of a 1-D integer array.
- Perform linear search on 1D array.
- The reverse of a 1D integer array
- Find 2's complement of the given binary number.
- Eliminate duplicate elements in an array.

WEEK 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting

Lab 8: Matrix problems, String operations, Bubble sort

- Addition of two matrices
- Multiplication two matrices
- Sort array elements using bubble sort

WEEK 9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 9: Pointers and dynamic memory allocation

Lab 9: Pointers and memory dereference.

- Write a C program to find the sum of a 1D array using malloc ()
- Enter n students data using calloc () and display failed students list
- Write a C program to implement realloc ()

<i>N. R. ...</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, INTUK Kakinada. Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT IV

WEEK 10:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

Tutorial 10: Functions, call by value, scope and extent,

Lab 10: Simple functions using call by value, solving differential equations using Euler's theorem.

- Concatenate two strings without built-in functions
- Reverse a string using built-in and without built-in string functions
- Write a C function to find the length of a string.
- Write a C function to transpose of a matrix.
- Write a C function to demonstrate numerical integration of differential equations using Euler's method

WEEK 11:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions:

Suggested Experiments/Activities:

Tutorial 11: Recursion, recursive calls

Lab 11: Recursive functions

- Write a recursive function to generate Fibonacci series.
- Write a recursive function to find the lcm of two numbers.
- Write a recursive function to find the factorial of a number.
- Write a C Program to implement Ackermann function using recursion.
- Write a recursive function to find the sum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 12: Call by reference, dangling pointers

Lab 12: Simple functions using Call by reference, Dangling pointers.

- Write a C program to swap two numbers using call by reference.
- Demonstrate Dangling pointer problem using a C program.
- Write a C program to copy one string into another using pointer.
- Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

<i>N. Rao</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>gammurthy</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada. Professor Department of CSE	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AI/ML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

WEEK 13:

Suggested Experiments/Activities:

Lab13: Structure, Self-Referential Structures, Bitfields, linked lists

- i) Write a C program to find the total, average of n students using structures
- ii) Read student name and marks from the command line and display the student details along with the total.
- iii) Create and display a singly linked list using self-referential structure.
- iv) Demonstrate the differences between structures and unions using a C program.
- v) Write a C program to shift/rotate using bitfields.
- vi) Write a C program to copy one structure variable to another structure of the same type.

WEEK 14:

Explore the differences between text and binary files.

Tutorial 14: File handling

- i) Write a C program to write and read text into a file.
- ii) Write a C program to write and read text into a binary file using fread() and fwrite()
- iii) Copy the contents of one file to another file.
- iv) Write a C program to merge two files into the third file using command-line arguments.
- v) Find no. of lines, words and characters in a file
- vi) Write a C program to print last n characters of a given file.

Text Books:

1. Programming in C - A practical approach by Ajay Mittal, Pearson Education, First Edition.
2. Schaum's Outline of Programming with C by Byron S. Gottfried, McGraw Hill, Second Edition.

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India
2. C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

N. R. ti	online	online	online	online	online
Dr. N Ranakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada. Professor Department of CSE JNTU College of Engg. Kakinada	Dr. C Krishna Mohan, Professor of CSE, JIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

BR 23 - I - I - ECE - 10

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HEALTH AND WELLNESS, YOGA AND SPORTS

(Common to All branches of Engineering)

3

23BS1L04(GE, EEE, MEG, ECE)

23BS2L04((GSE, AIDS, AIML, CSE(AIML))

Course Objectives:

The main objective of introducing this course is to make the students maintain their mental and physical wellness by balancing emotions in their life. It mainly enhances the essential traits required for the development of the personality.

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

- CO1: Understand the importance of yoga and sports for Physical fitness and sound health.
- CO2: Demonstrate an understanding of health-related fitness components.
- CO3: Compare and contrast various activities that help enhance their health.
- CO4: Assess current personal fitness levels.
- CO5: Develop Positive Personality

UNIT I

Concept of health and fitness, Nutrition and Balanced diet, basic concept of Immunity Relationship between diet and fitness, Globalization and its impact on health, Body Mass Index(BMI) of all age groups.

Activities:

- i) Organizing health awareness programmes in community
- ii) Preparation of health profile
- iii) Preparation of chart for balanced diet for all age groups


Mrs. A.D. Madhuri
(Chairperson - BOS)

Dr. O. Shyam Kumar
(University Nominee)


T. Durga Rao
(M.P. Ed)


K. Satyanarayana
(M.P. Ed)

Reference Books:

1. Gordon Edlin, Eric Golanty. Health and Wellness, 14th Edn. Jones & Bartlett Learning, 2022
2. T.K. V. Desikachar. The Heart of Yoga: Developing a Personal Practice
3. Archie J. Bahm. Yoga Sutras of Patanjali, Jain Publishing Company, 1993
4. Wiseman, John Lofty, SAS Survival Handbook: The Ultimate Guide to Surviving Anywhere Third Edition, William Morrow Paperbacks, 2014
5. The Sports Rules Book/ Human Kinetics with Thomas Hanlon. -- 3rd ed. Human Kinetics, Inc. 2014

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities of Health/Sports/Yoga.
2. Institutes must provide field/facility and offer the minimum of five choices of as many as Games/Sports.
3. Institutes are required to provide sports instructor / yoga teacher to mentor the students.

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting vivavoce on the subject.


Mrs. A.D. Madhuri
(Chairperson - BOS)

Dr. G. Shyam Kumar
(University Nominee)


T. Durga Rao
(M.P. Ed)


K. Satyanarayana
(B.P. Ed)

UNIT II

Concept of yoga, need for and importance of yoga, origin and history of yoga in Indian context, classification of yoga, Physiological effects of Asanas- Pranayama and meditation, stress management and yoga, Mental health and yoga practice.

Activities:

Yoga practices - Asana, Kriya, Mudra, Bandha, Dhyana, Surya Namaskar

UNIT III

Concept of Sports and fitness, importance, fitness components, history of sports, Ancient and Modern Olympics, Asian games and Commonwealth games.

Activities:

- (i) Participation in one major game and one individual sport viz., Athletics, Volleyball, Basketball, Handball, Football, Badminton, Kabaddi, Kho-kho, Table tennis, Cricket etc.
Practicing general and specific warm up, aerobics
- (ii) Practicing cardiorespiratory fitness, treadmill, run test, 9 min walk, skipping and running.


Mr. A.D. Madhuri
(Chairperson - BOS)

Dr. G. Sanyam Kumar
(University Nominee)


T. Durga Rao
(M.P. Ed.)


K. Sanyam Kumar
(B.P. Ed.)

BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU – 533 210, Andhra Pradesh, India
Autonomous
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
Course Structure – BR23
For UG - B.Tech: Computer Science and Engineering
I Year Course Structure

BR23
CSE
I-I

Semester-I							
S.No.	Course Category	Course Code	Course Name	L	T	P	Credits
1.	BSC	23BS1T01	Linear Algebra & Calculus	3	0	0	3
2.	BSC	23BS1T03	Chemistry	3	0	0	3
3.	ESC	23ES1T01	Basic Civil & Mechanical Engineering	3	0	0	3
4.	ESC	23ES1T03	Engineering Graphics	1	0	4	3
5.	ESC	23ES1T04	Introduction to Programming	3	0	0	3
6.	BSC	23BS1L02	Chemistry Lab	0	0	2	1
7.	ESC	23ES1L02	Engineering Workshop	0	0	3	1.5
8.	ESC	23ES1L03	IT Workshop	0	0	2	1
9.	ESC	23ES1L04	Computer Programming Lab	0	0	3	1.5
10.	BSC	23BS1L05	NSS/NCC/Scouts & Guides/Community Service	0	0	1	0.5
Total				13	0	15	20.5

<i>H. R. K.</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>B. S. N.</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor Department of CSE					

University College of Engineering
JNTUK Kakinada.

Page 1
TO
1
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1/3/24

HOD.
Dept of Science and Humanities
BVC Engineering College
Odalarevu - 533 210
1/3/24

Head of the
Computer Science & Engineering Dep.
BVC Engineering College, Odalarevu
East Godavari Dist. A.P. 533 210
1/3/24

I B.TECH.I SEMESTER

LINEAR ALGEBRA AND CALCULUS

Course Code: 23BS1T01

L	T	P	C
3	0	0	3

Course Objectives:

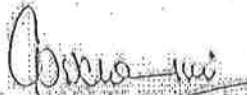
- To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

Course Outcomes:

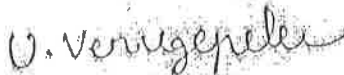
At the end of the course, the student will be able to

- CO1: Develop and use of matrix algebra techniques that are needed by engineers for practical applications.
- CO2: Utilize mean value theorems to real life problems.
- CO3: Familiarize with functions of several variables which is useful in optimization.
- CO4: Learn important tools of calculus in higher dimensions.
- CO5: Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.


A.D. Madhuri
(Chairman-DQS)


Dr. G.V.S.R. Deekshitulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, DQS)

UNIT I:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form. Finding two Non Singular matrices when PAQ is in Normal form. Cauchy-Binet formulae (without proof). Inverse of Non-singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method, Electrical Circuits (Application).

UNIT II:- Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, 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.

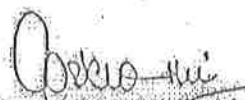
UNIT III:- Calculus

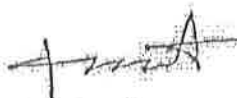
Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems on the above theorems.

UNIT IV:- Partial differentiation and Applications (Multi variable calculus)

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshitulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

UNIT V: Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals)

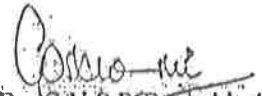
Textbooks:-

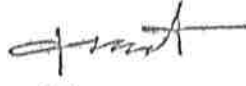
1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

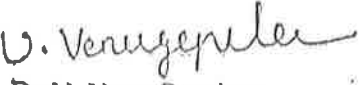
Reference Books:-

1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Micheael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshittulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

BB23-I-I-CSE (2)

L T P C
3 0 0 3

CHEMISTRY
(Common to EEE, ECE, CSE, AIDS, AIML, CSE(AIML))

2

Course code: 23BS2T03 (EEE, ECE)
23BS1T03 (CSE, AIDS, AIML, CSE(AIML))

Course Objectives:

- To familiarize engineering chemistry and its applications
- To train the students on the principles and applications of electrochemistry and polymers
- To introduce instrumental methods, molecular machines and switches.

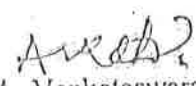
Course Outcomes: At the end of the course, the students will be able to:

- Compare the materials of construction for battery and electrochemical sensors.
- Explain the preparation, properties, and applications of thermoplastics & thermosetting, elastomers & conducting polymers.
- Explain the principles of spectrometry, slo in separation of solid and liquid mixtures.
- Apply the principle of Band diagrams in the application of conductors and semiconductors.


A.D. Madhuri
(Chairman - BOS)


Dr. S. Satya Venk
(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

5

(5)

UNIT I Structure and Bonding Models:

12 Hours

Fundamentals of Quantum mechanics, Schrodinger Wave equation, significance of Ψ and Ψ^2 , particle in one dimensional box, molecular orbital theory – bonding in homo- and heteronuclear diatomic molecules – energy level diagrams of O_2 and CO , etc. π -molecular orbitals of butadiene and benzene, calculation of bond order.

UNIT II Modern Engineering materials

12 Hours

Semiconductors, band diagram in solids, Semiconductor devices (p-n junction diode as rectifier and transistors)

Super conductors-Introduction basic concept, applications.

Supercapacitors: Introduction, Basic Concept-Classification – Applications.

Nano materials: Introduction, classification, properties and applications of Fullerenes, carbon nano tubes and Graphenes nanoparticles.

UNIT III Electrochemistry and Applications:

12 Hours

Electrochemical cell, Nernst equation, cell potential calculations and numerical problems, potentiometry- potentiometric titrations (redox titrations), concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations).

Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples

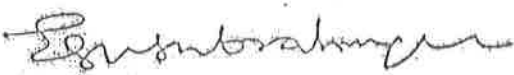
Primary cells – Zinc-air battery, Secondary cells –lithium-ion batteries- working of the batteries including cell reactions; Fuel cells, hydrogen-oxygen fuel cell- working of the cells. Polymer Electrolyte Membrane Fuel cells (PEMFC).


A. D. Madhuri
(Chairman - BOS)


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(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

6

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference Books:

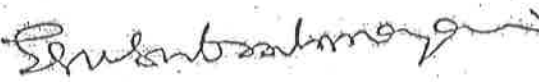
1. Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
2. J.M. Lehn, Supra Molecular Chemistry, VCH Publications


A.D. Madhuri
(Chairman - BOS)


Dr. S. Salyaveni
(University Nominee)


Dr. S. Masihafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

(7)

UNIT IV Polymer Chemistry

12 Hours

Introduction to polymers, functionality of monomers, chain growth and step growth polymerization, coordination polymerization, with specific examples and mechanisms of polymer formation.

Plastics -Thermoand Thermosetting plastics, Preparation, properties and applications of - PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres.

Elastomers-Buna-S, Buna-N-preparation, properties and applications.

Conducting polymers - polyacetylene, polyaniline, - mechanism of conduction and applications. Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA).

UNIT V Instrumental Methods, and Applications

12 Hours

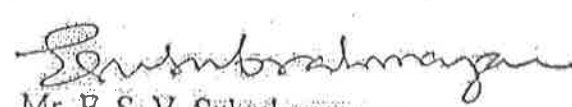
Electromagnetic spectrum. Absorption of radiation: Beer-Lambert's law. UV-Visible Spectroscopy, electronic transition, Instrumentation, IR spectroscopies, fundamental modes and selection rules, Instrumentation Chromatography-Basic Principle, Classification-HPLC: Principle, Instrumentation and Applications.


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(Chairman - BOS)


Dr. S. Satyavani
(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

(8)



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU (AUTONOMOUS)

Department of Civil Engineering

(23ES1T01)

I YEAR I SEM	Course Code : 23ES2T01	L	T	P	C
		3	0	0	3
Course Title: BASIC CIVIL AND MECHANICAL ENGINEERING					
PART A: BASIC CIVIL ENGINEERING					
Course Objectives: • Get familiarized with the scope and importance of Civil Engineering sub-divisions. • Introduce the preliminary concepts of surveying. • Acquire preliminary knowledge on Transportation and its importance in nation's economy. • Get familiarized with the importance of quality, conveyance and storage of water. • Introduction to basic civil engineering materials and construction techniques.					
Course Outcomes: On completion of the course, the student should be able to: CO1: Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society. CO2: Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying. CO3: Realize the importance of Transportation in nation's economy and the engineering measures related to Transportation. CO4: Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated. CO5: Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.					
UNIT I Basics of Civil Engineering: Role of Civil Engineers in Society- Introduction to Civil Engineering Construction Materials-Cement - Aggregate -Bricks- Cement concrete- Steel- Bitumen-Building Planning & Construction Techniques-Introduction to Prefabricated Construction Techniques.					
UNIT II Geotechnical Engineering: Introduction to Properties of soils- Permeability & Seepage- Shear strength-Compaction and Consolidation-Soil exploration-Shallow and Deep Foundations Structural Engineering: Introduction to Different types of structures-Framed structures- Arches-Suspension bridges-Trusses, Reinforced Concrete Structures-Steel Structures- Design philosophies-Prestressed concrete structures.					

Dr. V. Lakshmi, Professor UCEK, JNTU Kakinada. (University Nominee)	Dr. A. Murali Krishna, Professor, IIT Tirupathi	Dr. V. Ramana murthy, Professor, NIT Warangal.	Dr. B. Chandra Sekhar, Director (Technical), Praneeth Engg Dept, Hyderabad (Industrial Expert)	Dr. Venkateswarlu Hasti, Post Doctoral fellow, IISc Bangalore. (Alumni)
<i>(amb)</i>	<i>-online-</i>	<i>-online-</i>	<i>-online-</i>	<i>-online-</i>



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU (AUTONOMOUS)

3

Department of Civil Engineering

Surveying: Introduction to Objectives of Surveying- Horizontal Measurements- Angular Measurements- Bearings- Levelling- Instruments used for levelling -Contour mapping.

UNIT III

Transportation Engineering Importance of Transportation in Nation's economic development- Introduction to Types of Highway Pavements- Flexible Pavements and Rigid Pavements - Simple Differences. Basics of Harbour, Tunnel, Airport, and Railway Engineering.

Water Resources and Environmental Engineering: Introduction to Sources of water- Hydrology-Rainwater Harvesting-Water Storage and Conveyance Structures. Introduction to Quality of water- Specifications- Treatment-Sewage-Disposal

Textbooks:

1. Basic Civil Engineering, M.S.Palanisamy, , Tata McGraw Hill publications (India) Pvt.Ltd. Fourth Edition.
2. Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers.2022. First Edition.
3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

Reference Books:

1. Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019. Fifth Edition.
2. Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi. 2016
3. Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023. 38th Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10th Edition.
5. Indian Standard DRINKING WATER — SPECIFICATION IS 10500-2012.

Dr. V. Lakshmi, Professor UCEK, JNTU Kakinada. (University Nominee)	Dr. A. Murali Krishna, Professor, IIT Tirupathi	Dr. V. Ramna murthy, Professor, NIT Warangal.	Er.B.Chandra Sekhar, Director (Technical), Praneeth Engg Dept, Hyderabad (Industrial Expert)	Dr.Venkateswarlu Hasti, Post Doctoral fellow, IISc Bangalore. (Alumni)
<i>Cemb</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>

PROFESSOR
Department of Civil Engineering
University College of Engineering

(10)

[Signature]
Head of the Department
Dept. of Civil Engineering

I YEAR I SEM	Course Code: 23ES1T01 (for CSE & Allied Branches)	L	T	P	C
I YEAR II SEM	Course Code: 23ES2T01 (for CE, EEE, ME & ECE Branches)	3	0	0	3

BASIC CIVIL AND MECHANICAL ENGINEERING
(Common to All branches of Engineering)

PART B: BASIC MECHANICAL ENGINEERING

Course Objectives: The students after completing the course are expected to

COB1: Get familiarize with the scope and importance of Mechanical Engineering in different sectors & industries.

COB2: Explain different engineering materials and different manufacturing processes.

COB3: Provide an overview of different thermal and mechanical transmission systems and introduce basics of robotics and its applications.

Course Outcomes:

On completion of the course, the student should be able to

CO1: Understand the different manufacturing processes.

CO2: Explain the basics of thermal engineering and its applications.

CO3: Describe the working of different mechanical power transmission systems and power plants.

CO4: Describe the basics of robotics and its applications.

UNIT I

UNIT I Introduction to Mechanical Engineering: Role of Mechanical Engineering in Industries and Society-Technologies in different sectors such as Energy, Manufacturing, Automotive, Aerospace, and Marine sectors. Engineering Materials - Metals-Ferrous and Non-ferrous, Ceramics, Composites, Smart materials

UNIT II

UNIT II Thermal Engineering – Basic Laws of Thermodynamics, working principle of Boilers, Otto cycle, Diesel cycle, Refrigeration and air-conditioning cycles: Air Refrigeration and Vapour Compression Refrigeration-Working Principles only. Introduction to Pumps and Compressors (Basics, Classification and Applications only), IC engines, 2-Stroke and 4-Stroke engines, SI/CI Engines, Components of Electric and Hybrid Vehicles. Power plants – working principle of Steam, Diesel, Hydro, Nuclear and Combined Cycle power plants (Layout, Working)

Dr. A. Swarna Kumari Professor in ME Dept., UCEK (A), JNTUK	Dr. K Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

UNIT III

UNIT III. Manufacturing Processes: Principles of Casting, Forming, joining processes, Machining, Introduction to CNC machines, 3D printing, and Smart manufacturing.

Mechanical Power Transmission - Belt Drives, Chain, Rope drives, Gear Drives and their applications.
Introduction to Robotics - Joints & links, configurations, and applications of robotics.

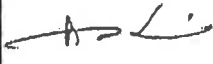
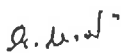
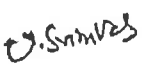
(NOTE: The subject covers only the basic principles of Civil and Mechanical Engineering systems. The evaluation shall be intended to test only the fundamentals of the subject)

Textbooks:

1. Internal Combustion Engines by V.Ganesan, By Tata McGraw Hill publications (India) Pvt. Ltd.
2. A Tear book of Theory of Machines by S.S. Rattan, Tata McGraw Hill Publications, (India) Pvt. Ltd.
3. An introduction to Mechanical Engg by Jonathan Wicker and Kemper Lewis, Cengage learning India Pvt. Ltd.

Reference Books:

1. AppuuKuttan KK, Robotics, I.K. International Publishing House Pvt. Ltd. Volume-I
2. 3D printing & Additive Manufacturing Technology- L. Jyothish Kumar, Pulak M Pandey, Springer publications
3. Thermal Engineering by Mahesh M Rathore Tata McGraw Hill publications (India) Pvt. Ltd.
4. G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, Tata McGraw Hill publications (India) Pvt. Ltd.

					
Dr. A. Swarna Kumari Professor in ME Dept.,UCEK (A), JNTUK	Dr. K Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member- Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

I YEAR I SEM I YEAR II SEM	Course Code : 23ES1T03 (for CSE & Allied Branches) Course Code : 23ES2T03 (for CE, EEE, ME & ECE Branches)	L	T	P	C
		1	0	4	3

ENGINEERING GRAPHICS

UNIT I

Introduction: Lines, Lettering and Dimensioning, Geometrical Constructions and constructing regular polygons by general methods only.

Curves: construction of ellipse, parabola and hyperbola by general method only, Cycloids, Involutcs, Normal and tangent to Curves.

Scales: Plain scales, diagonal scales

UNIT II

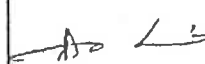
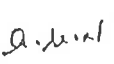
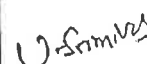
Orthographic Projections: Reference plane, importance of reference lines or Plane, Projections of a point situated in any one of the four quadrants.

Projections of Straight Lines: Projections of straight lines parallel to both reference planes, perpendicular to one reference plane and parallel to other reference plane, inclined to one reference plane and parallel to the other reference plane. Projections of Straight Line Inclined to both the reference planes

Projections of Planes: regular planes Perpendicular to both reference planes, parallel to one reference plane and inclined to the other reference plane; plane inclined to both the reference planes.

UNIT III

Projections of Solids: Types of solids: Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane and Axis parallel to both the reference planes, Projection of Solids with axis inclined to one reference plane and parallel to another plane.

					
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UNIT IV

Basic Concept of Sections of Solids: Sections of Solids in simple positions (Cone, Prism, Pyramid)

Development of Surfaces: Methods of Development: Parallel line development and radial line development. Development of a cube, prism, cylinder, pyramid and cone..

UNIT V

Conversion of Views: Conversion of isometric views to orthographic views; Conversion of orthographic views to isometric views.

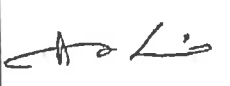
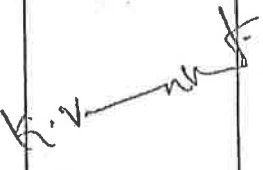
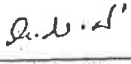
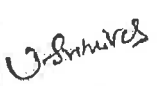
Computer graphics: Creating 2D & 3D drawings of objects including PCB and Transformations using Auto CAD (Not for end examination).

Text Books:

1. N. D. Bhatt, Engineering Drawing, Charotar Publishing House, 2016.

Reference Books:

1. Engineering Drawing, K.L. Narayana and P. Kannaiah, Tata McGraw Hill, 2013.
 2. Engineering Drawing, M.B.Shah and B.C. Rana, Pearson Education Inc, 2009.
- Engineering Drawing with an Introduction to AutoCAD, Dhananjay Jolhe, Tata McGraw Hill, 2017.

					
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Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

I Year - I Semester	Code: 23ES1T04	L	T	P	C
		3	0	0	3

INTRODUCTION TO PROGRAMMING (Common to All branches of Engineering)

Course Objectives:

- To introduce students to the fundamentals of computer programming.
- To provide hands-on experience with coding and debugging.
- To foster logical thinking and problem-solving skills using programming.
- To familiarize students with programming concepts such as data types, control structures, functions, and arrays.
- To encourage collaborative learning and teamwork in coding projects.

Course Outcomes:

A student after completion of the course will be able to

CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking.

CO2: Analyze a problem and develop an algorithm to solve it.

CO3: Implement various algorithms using the C programming language.

CO4: Understand more advanced features of C language.

CO5: Develop problem-solving skills and the ability to debug and optimize the code

UNIT-I: Introduction to Programming and Problem Solving: Computer System: History of Computers, Introduction to Components of Computer System, compilation and execution, Program Counter Basics of a Computer Program-. Programming Languages and History of C, Basics Structure of a Computer Program, Software Development Process: Characteristics Algorithm, Flowchart, Pseudo Code, Header file, Errors in compilation time, Primitive Data Types, Formatted I/O's, Format Modifiers. Variable Rules, Keywords, Constants, String and Operators. Type Conversions, Priority Table
Problemsolving strategies: Top-down and Bottom-up approach, Time and space complexities.

UNIT-II: Control Structures (Flow of Controls):

Decision Branching Statement (Selection): Two-way selection: if, if-else, nested if

Multi-way selection: switch, else-if ladder

Decision Looping Statement (Repetition/Iterative): while (Pretest/Condition-Controlled Loops) and do-while (Post test) Loops, for loop (Counter Controlled) and Unconditional statements, Nested Loops

UNIT-III Arrays & Pointers:

Arrays: Arrays definition and indexing, Types of Arrays

One-Dimensional Arrays: Initialization, declaration and accessing, input and output of array

Two-Dimensional Arrays: Initialization, declaration, accessing, input and output of array

Case Study: Matrices, Larger Dimensional Arrays

Pointers: Concept of a pointer, Initialization of pointer variables and access, Pointer dereferencing and address operators, array manipulation using pointers, Dynamic Memory Management functions, pointers to pointers, command line arguments

H.R. Kic	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT-IV: Functions & Strings:

Functions: Definition of Function, Categorization of User define functions, Local, Global variables and Actual and Formal parameters, Scope life time variables, pass by value and reference, Recursive function
Case Study: Factorial, Fibonacci Series, Basics of Sorting/and Searching

Strings: Introduction to String, String Handling Functions

UNIT-V: User Defined Data Types & File Handling:

User Defined Data Types: Structures: declaration, Initialization, accessing, nested structures, self-referential structure, structures to array, pointer and functions, Union, typedef and enum

File Handling: Basics of File Handling (only if time is available, otherwise should be done as part of the lab).

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, Second Edition 2015.
2. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill, Second Edition,
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1. Computing fundamentals and C Programming, E Balagurusamy, McGraw- Hill Education.
2. Programming in C, Rema Theraja, Oxford, 2016, 2nd edition
3. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage
4. C Programming- A Beginners Guide by Prof. Mangesh, Dr. D R Shashirag, Prof. Bodapati Narasimha Rao, Prof. B P N Madhu Kumar.

<i>H-R</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

Department of CSE
 University College of Engg.
 JNTUK Kakinada.

CHEMISTRY LAB

(Common to ~~EEE, ECE, CSE & Allied~~ IT)

Course Objectives:

- Verify the fundamental concepts with experiments.

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

- Determine the cell constant and conductance of solutions.
- Prepare advanced polymer Bakelite materials.
- Measure the strength of an acid present in secondary batteries.
- Analyze the IR spectra of some organic compounds.

List of Experiments:

1. Measurement of $10Dq$ by spectrophotometric method
2. Conductometric titration of strong acid vs. strong base
3. Conductometric titration of weak acid vs. strong base
4. Determination of cell constant and conductance of solutions
5. Potentiometry - determination of redox potentials and emfs
6. Determination of Strength of an acid in Pb-Acid battery
7. Preparation of a Bakelite
8. Verify Lambert-Beer's law
9. Wavelength measurement of sample through UV-Visible Spectroscopy
10. Identification of simple organic compounds by IR
11. Preparation of nanomaterials by precipitation method
12. Estimation of Ferrous Iron by Dichrometry

Reference:

"Vogel's Quantitative Chemical Analysis 6th Edition 6th Edition" Pearson Publications by J. Mendham, R.C. Denney, J.D. Barnes and B. Sivasankar


A.D. Madhuri
(Chairman - BOS)

Dr. S. Satyareni
(University Nominee)

Dr. S. Musthafa
(Subject Expert)

Dr. A. Venkateswara Rao
(Subject Expert)

Mr. E. S. V. Subrahmanyam
(Member, BOS)


I YEAR I SEM ✓	Course Code : 23ES1L02 (for CSE & Allied Branches)	L	T	P	C
~~I YEAR II SEM~~	~~Course Code : 23ES2L02~~ (for CE, EEE, ME & ECE Branches)	0	0	3	1.5
ENGINEERING WORKSHOP (Common to All branches of Engineering)					
1. Demonstration: Safety practices and precautions to be observed in workshop.					
2. Wood Working: Familiarity with different types of woods and tools used in wood working and make following joints: a) Half-Lap joint b) Mortise and Tenon joint and c) Corner Dovetail joint or Bridle joint					
3. Sheet Metal Working: Familiarity with different types of tools used in sheet metal working, Developments of following sheet metal jobs from GI sheets: a) Tapered tray b) Elbow pipe c) Brazing					
4. Fitting: Familiarity with different types of tools used in fitting and do the following fitting exercises: a) V-fit b) Semi-circular fit c) Bicycle tyre puncture and change of two-wheeler tyre.					
5. Electrical Wiring: Familiarity with different types of basic electrical circuits and make the following connections: a) Parallel and series b) Two-way switch c) Godown lighting d) Tube Light e) Soldering of wires					
6. Foundry Trade: Demonstration and practice on Moulding tools and processes, Preparation of Green Sand Moulds for given Pattern.					

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Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

Welding Shop: Demonstration and practice on Arc Welding and Gas welding. Preparation of Lap joint and Butt joint.

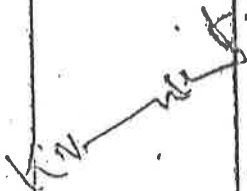
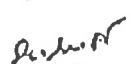
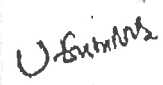
3. Plumbing: Demonstration and practice of Plumbing tools, Preparation of Pipe joints with coupling for same diameter and with reducer for different diameters

Text Books:

1. Basic Workshop Technology: Manufacturing Process, Felix W.; Independently Published, 2019.
2. Workshop Processes, Practices and Materials; Bruce J. Black, Routledge publishers, 5th Edn. 2015.
3. A Course in Workshop Technology Vol I, & II, B.S. Raghuwanshi, Dhanpath Rai & Co., 2015 & 2017.

Reference Books:

1. Elements of Workshop Technology, Vol. I by S. K. Hajra Choudhury & Others, Media Promoters and Publishers, Mumbai. 2007, 14th edition
2. Workshop Practice by H. S. Bawa, Tata-McGraw Hill, 2004.
3. Wiring Estimating, Costing and Contracting; Soni P.M. & Upadhyay P.A.; Atul Prakashan, 2021-22

					
Dr. A. Swarna Kumari Professor in ME Dept., UCEK (A), JNTUK	Dr. K. Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K.M. Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member- Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

I Year - I Semester	Code: 23ESIL03	L	T	P	C
		0	0	2	1
IT WORKSHOP (Common to CSE/CSE(AI&DS)/CSE(AIML)/AIML)					
Course Objectives: • To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables • To demonstrate configuring the system as Dual boot both Windows and other Operating Systems Viz. Linux, BOSS • To teach basic command line interface commands on Linux. • To teach the usage of Internet for productivity and self-paced life-long learning • To introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools					
Course Outcomes: CO1: Perform Hardware troubleshooting. CO2: Understand Hardware components and inter dependencies. CO3: Safeguard computer systems from viruses/worms. CO4: Document/ Presentation preparation. CO5: Perform calculations using spreadsheets					
PC Hardware & Software Installation Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor. Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content. Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva. Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot (VMWare) with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva Task 5: Every student should install BOSS on the computer. The system should be configured as dual boot (VMWare) with both Windows and BOSS. Lab instructors should verify the installation and follow it up with a Viva					
Internet & World Wide Web Task1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.					

Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	online Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	online Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	online Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	online Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd.	online Dr. B S N Murthy Professor of CSE, BVCEC.
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Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

LaTeX and WORD

Task 1 – Word Orientation: The mentor needs to give an overview of La TeX and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of La TeX and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using La TeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 2: Using LaTeX and Word to create a project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both La TeX and Word.

Task 3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

EXCEL

Excel Orientation: The mentor needs to tell the importance of MS office or equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text

Task 2: Calculating GPA - Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function,

LOOKUP/VLOOKUP

Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting

H. R. ...	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Hyderabad.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd.	Dr. B S N Murthy Professor of CSE, BVCEC.

POWERPOINT

Task 1: Students will be working on basic power point utilities and tools which help them create basic power point presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.

Task 2: Interactive presentations - Hyperlinks, Inserting - Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide sorter, notes etc), and Inserting - Background, textures, Design Templates, Hidden slides.

AI TOOLS - ChatGPT

Task 1: Prompt Engineering: Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them.

• Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of France?"

Task 2: Creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas

Ex: Prompt: "In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality."

Task 3: Language Translation: Experiment with translation tasks by providing a sentence in one language and asking the model to translate it into another language. Compare the output to see how accurate and fluent the translations are.

Ex: Prompt: "Translate the following English sentence to French: 'Hello, how are you doing today?'"

Text Books:

Reference Books:

1. Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
2. The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech, 2013, 3rd edition
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, 2012, 2nd edition

Reference Books:

4. PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft)
5. LaTeX Companion, Leslie Lamport, PHI/Pearson.
6. IT Essentials PC Hardware and Software Companion Guide, David Anfinson and Ken Quamme. - CISCO Press, Pearson Education, 3rd edition
7. IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan- CISCO Press, Pearson Education, 3rd edition

H. P. ...	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, JIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

I Year - I Semester	Code: 23ES1L04	L	T	P	C
		0	0	3	1.5

COMPUTER PROGRAMMING LAB
(Common to All branches)

Course Objectives:

The course aims to give students hands – on experience and train them on the concepts of the C programming language.

Course Outcomes:

- CO1: Read, understand, and trace the execution of programs written in C language.
 CO2: Select the right control structure for solving the problem.
 CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers.
 CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.

UNIT I**WEEK 1:**

Objective: Getting familiar with the programming environment on the computer and writing the first program.

Suggested Experiments/Activities:

Tutorial 1: Problem-solving using Computers.

Lab 1: Familiarization with programming environment

- Basic Linux environment and its editors like Vi, Vim & Emacs etc.
- Exposure to Turbo C, gcc
- Writing simple programs using printf(), scanf()

WEEK 2:

Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation.

Suggested Experiments/Activities:

Tutorial 2: Problem-solving using Algorithms and Flow charts.

Lab 2: Converting algorithms/flow charts into C Source code.

Developing the algorithms/flowcharts for the following sample programs

- Sum and average of 3 numbers
- Conversion of Fahrenheit to Celsius and vice versa
- Simple interest calculation

WEEK 3:

Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants.

Suggested Experiments/Activities:

Tutorial 3: Variable types and type conversions:

Lab 3: Simple computational problems using arithmetic expressions.

- Finding the square root of a given number
- Finding compound interest
- Area of a triangle using heron's formulae
- Distance travelled by an object

N. R. ...	online	online	online	online	online
Dr. N. Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy, Professor of CSE, BVCEC.
Professor ... of CSE					

UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial 4: Operators and the precedence and as associativity:

Lab 4: Simple computational problems using the operator' precedence and associativity

i) Evaluate the following expressions.

a. $A+B*C+(D*E)+F*G$

b. $A/B*C-B+A*D/3$

c. $A+++B---A$

d. $J=(i++)+(++i)$

ii) Find the maximum of three numbers using conditional operator

iii) Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5:

Objective: Explore the full scope of different variants of "if construct" namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

i) Write a C program to find the max and min of four numbers using if-else.

ii) Write a C program to generate electricity bill.

iii) Find the roots of the quadratic equation.

iv) Write a C program to simulate a calculator using switch case.

v) Write a C program to find the given year is a leap year or not.

WEEK 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

i) Find the factorial of given number using any loop.

ii) Find the given number is a prime or not.

iii) Compute sine and cos series

iv) Checking a number palindrome

v) Construct a pyramid of numbers.

N. R. No.	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIMI), CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- Find the min and max of a 1-D integer array.
- Perform linear search on 1D array.
- The reverse of a 1D integer array
- Find 2's complement of the given binary number.
- Eliminate duplicate elements in an array.

WEEK 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting

Lab 8: Matrix problems, String operations, Bubble sort

- Addition of two matrices
- Multiplication two matrices
- Sort array elements using bubble sort

WEEK 9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 9: Pointers and dynamic memory allocation

Lab 9: Pointers and memory dereference.

- Write a C program to find the sum of a 1D array using malloc ()
- Enter n students data using calloc () and display failed students list
- Write a C program to implement realloc ()

<i>N. R. ...</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT IV

WEEK 10:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

Tutorial 10: Functions, call by value, scope and extent,

Lab 10: Simple functions using call by value, solving differential equations using Euler's theorem.

- Concatenate two strings without built-in functions
- Reverse a string using built-in and without built-in string functions
- Write a C function to find the length of a string.
- Write a C function to transpose of a matrix.
- Write a C function to demonstrate numerical integration of differential equations using Euler's method

WEEK 11:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions.

Suggested Experiments/Activities:

Tutorial 11: Recursion, recursive calls

Lab 11: Recursive functions

- Write a recursive function to generate Fibonacci series.
- Write a recursive function to find the lcm of two numbers.
- Write a recursive function to find the factorial of a number.
- Write a C Program to implement Ackermann function using recursion.
- Write a recursive function to find the sum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 12: Call by reference, dangling pointers

Lab 12: Simple functions using Call by reference, Dangling pointers.

- Write a C program to swap two numbers using call by reference.
- Demonstrate Dangling pointer problem using a C program.
- Write a C program to copy one string into another using pointer.
- Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

N. R. Rao	online	online	online	online	Dr. B S N Murthy
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AJML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor Department of CSE					

UNIT V

WEEK 13:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 13: Structure, Bitfields, Self-Referential Structures, Linked lists

Lab 13: Structure, Self-Referential Structures, Bitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields

- Write a C program to find the total, average of n students using structures
- Read student name and marks from the command line and display the student details along with the total.
- Create and display a singly linked list using self-referential structure.
- Demonstrate the differences between structures and unions using a C program.
- Write a C program to shift/rotate using bitfields.
- Write a C program to copy one structure variable to another structure of the same type.

WEEK 14:

Objective: To understand data files and file handling with various file I/O functions.

Explore the differences between text and binary files.

Suggested Experiments/Activities:

Tutorial 14: File handling

Lab 14: File operations

- Write a C program to write and read text into a file.
- Write a C program to write and read text into a binary file using fread() and fwrite()
- Copy the contents of one file to another file.
- Write a C program to merge two files into the third file using command-line arguments.
- Find no. of lines, words and characters in a file
- Write a C program to print last n characters of a given file.

Text Books:

- Programming in C - A practical approach by Ajay Mittal, Pearson Education, First Edition.
- Schaum's Outline of Programming with C by Byron S. Gottfried, McGraw Hill, Second Edition.

Reference Books:

- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India
- C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

N. R. V.	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B. S. N Murthy Professor of CSE, BVCEC.

L	T	P	C
0	0	1	0

NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

(Common to All branches of Engineering)

~~23BS1L05((CSE,AIDS,AIML,CSE(AIML))~~

~~23BS2L05 (CE,EEE,MEC,ECT)~~

Course Objectives:

The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the student will be able

- CO1: Understand the importance of discipline, character and service motto
- CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques.
- CO3: Explore human relationships by analyzing social problems.
- CO4: Determine to extend their help for the fellow beings and down trodden people.
- CO5: Develop leadership skills and civic responsibilities.

UNIT I Orientation

General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

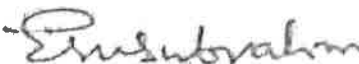
Activities:

- i) Conducting -ice breaking sessions-expectations from the course-knowing personal talents and skills
- ii) Conducting orientations programs for the students -future plans-activities-releasing road map etc.
- iii) Displaying success stories-motivational biopics- award winning movies on societal issues etc.
- iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.


Mrs. A.D. Madhuri
(Chairperson -BOS)

Dr. G. Shyam Kumar
(University Nominee)


S T Naidu
(NSS Programme Officer)


E S V Subrahmanyam
(BOS Member)

UNIT II

Nature & Care Activities:

231

- i) Best out of waste competition.
- ii) Poster and signs making competition to spread environmental awareness.
- iii) Recycling and environmental pollution article writing competition.
- iv) Organising Zero-waste day.
- v) Digital Environmental awareness activity via various social media platforms.
- vi) Virtual demonstration of different eco-friendly approaches for sustainable living.
- vii) Write a summary on any book related to environmental issues.

UNIT III

Community Service Activities:

CO1:

- i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village, Identification of problems- helping them to solve via media- authorities-experts-etc.

- ii) Conducting awareness programs on Health-related issues such as General Health, Mental health, Spiritual Health, HIV/AIDS.
- iii) Conducting consumer Awareness. Explaining various legal provisions etc.
- iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
- v) Any other programmes in collaboration with local charities, NGOs etc.

- i) O
- ii) P
- iii) Pr

Mrs. A. D. Madhuri
(Chairperson)

Mrs. A. D. Madhuri
(Chairperson - BOS)

Dr. G. Shyam Kumar
(University Nominee)

S. T. Naidu

E. S. V. Subrahmanyam

Reference Books:

1. Nirmalya Kumar Sinha & Surajit Majumder, *A Text Book of National Service Scheme* Vol. I, Vidya Kutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. *Red Book - National Cadet Corps - Standing Instructions Vol I & II*, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., "Introduction to Environmental Engineering", McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. "Introduction to Environmental Engineering and Science", Pearson Education, New Delhi. 2/e 2007
5. Rana Abuja. *Social Problems in India*, Rawat Publications, New Delhi.

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

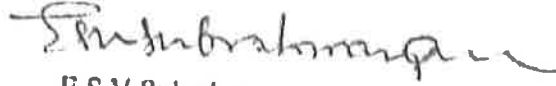
Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.


Mrs A.D. Madhuri
(Chairperson -BOS)

Dr.G.Shyam Kumar
(University Nominee)


S T Naidu
(NSS Programme Officer)


E S V Subrahmanyam
(BOS Member)

30



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU – 533 210, Andhra Pradesh, India
Autonomous

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(AI&DS)

Course Structure – BR23
For UG - B.Tech: Computer Science and Engineering
(Artificial Intelligence and Data Science)
I Year Course Structure

Semester-I							
S.No.	Course Category	Course Code	Course Name	L	T	P	Credits
1.	BSC	23BS1T01	Linear Algebra & Calculus	3	0	0	3
2.	BSC	23BS1T03	Chemistry	3	0	0	3
3.	BSC	23ES1T01	Basic Civil & Mechanical Engineering	3	0	0	3
4.	ESC	23ES1T03	Engineering Graphics	1	0	4	3
5.	ESC	23ES1T04	Introduction to Programming	3	0	0	3
6.	BSC	23BS1L02	Chemistry Lab	0	0	2	1
7.	ESC	23ES1L02	Engineering Workshop	0	0	3	1.5
8.	ESC	23ES1L03	IT Workshop	0	0	2	1
9.	ESC	23ES1L04	Computer Programming Lab	0	0	3	1.5
10.	BSC	23BS1L05	NSS/NCC/Scouts & Guides/Community Service	0	0	1	0.5
Total				13	0	15	20.5

<i>H. R. Rao</i>					<i>PS Rao</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. Jimson Mathew, Professor of CSE, IIT Patna.	Dr. Ch Sudhakar, Professor of CSE, NIT Warangal.	Mr. K Rambabu, Director, Monster India Pvt, Bangalore.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, BVCE Hyderabad.	Dr. P. Subba Rao, Professor of CSE(AI&DS), BVCEC. Head of the CAD, AIML & CSM Engineering College, Odalarevu East Godavari, A.P. 533 210

Professor
Department of CSE
University College of Engg.
JNTUK Kakinada.



Dept of Science and Human
BVC Engineering College
Odalarevu - 533 210
10/2/24

PS Rao
01/3/24

Head of the
CAD, AIML & CSM
BVC Engineering College, Odalarevu
East Godavari, A.P. 533 210

I B.TECIL SEMESTER

LINEAR ALGEBRA AND CALCULUS

Course Code: 23BSIT01

(for all)

L	T	P	C
3	0	0	3

Course Objectives:

- To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

Course Outcomes:

At the end of the course, the student will be able to

CO1: Develop and use of matrix algebra techniques that are needed by engineers for practical applications.

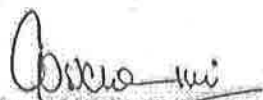
CO2: Utilize mean value theorems to real life problems.

CO3: Familiarize with functions of several variables which is useful in optimization.

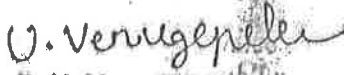
CO4: Learn important tools of calculus in higher dimensions.

CO5: Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshitulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

UNIT I:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form. Finding two Non Singular matrices when PAQ is in Normal form. Cauchy-Binet formulac(without proof). Inverse of Non- singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method, Electrical Circuits(Application).

UNIT II:- Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, 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:- Calculus

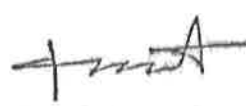
Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems on the above theorems.

UNIT IV:- Partial differentiation and Applications (Multi variable calculus)

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.


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(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

(3)

UNIT V:- Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals)

Textbooks:-

1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

Reference Books:-

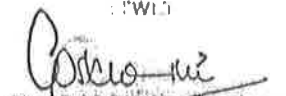
1. Thomas Calculus; George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Micheael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)



A.D. Madhuri
(Chairman-BOS)



Dr. U. Venu Gopalam
(Subject Expert)



Dr. G.V.S.R. Deekshitulu
(University Nominee)

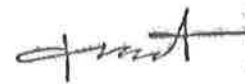
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Dr. T.S.R. Murthy
(Subject Expert)

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Mr. P. Ganga Raju
(Member, BOS)

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2023-I-I-AIDS-(2)

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CHEMISTRY
(Common to EEE, ECE, CSE, AIDS, AIML, CSE(AIML))

2

Course code : ~~23BS2T03(EEE,ECE)~~
~~23BS1T03(CSE,AIDS,AIML,CSE(AIML))~~

Course Objectives:

- To familiarize engineering chemistry and its applications
- To train the students on the principles and applications of electrochemistry and polymers
- To introduce instrumental methods, molecular machines and switches

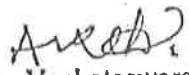
Course Outcomes: At the end of the course, the students will be able to:

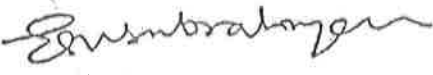
- Compare the materials of construction for battery and electrochemical sensors.
- Explain the preparation, properties, and applications of thermoplastics & thermosetting, elastomers & conducting polymers.
- Explain the principles of spectrometry, slc in separation of solid and liquid mixtures.
- Apply the principle of Band diagrams in the application of conductors and semiconductors.


A.D. Madhuri
(Chairman - BOS)


Dr. S. Satya Veni
(University Nominee)


Dr. S. Austhafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

(5)

5

UNIT I Structure and Bonding Models:

12 Hours

Fundamentals of Quantum mechanics, Schrodinger Wave equation, significance of Ψ and Ψ^2 , particle in one dimensional box, molecular orbital theory – bonding in homo- and heteronuclear diatomic molecules – energy level diagrams of O_2 and CO , etc. π -molecular orbitals of butadiene and benzene, calculation of bond order.

UNIT II Modern Engineering materials

12 Hours

Semiconductors, band diagram in solids, Semiconductor devices (p-n junction diode as rectifier and transistors)

Super conductors-Introduction basic concept, applications.

Supercapacitors: Introduction, Basic Concept-Classification – Applications.

Nano materials: Introduction, classification, properties and applications of Fullerenes, carbon nano tubes and Graphines nanoparticles.

UNIT III Electrochemistry and Applications:

12 Hours

Electrochemical cell, Nernst equation, cell potential calculations and numerical problems, potentiometry- potentiometric titrations (redox titrations), concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations).

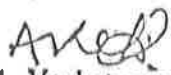
Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples

Primary cells – Zinc-air battery, Secondary cells –lithium-ion batteries- working of the batteries including cell reactions; Fuel cells, hydrogen-oxygen fuel cell- working of the cells. Polymer Electrolyte Membrane Fuel cells (PEMFC).


A. D. Madhuri
(Chairman - BOS)


Dr. S. Satyavani
(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

6

Textbooks:

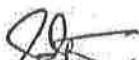
1. Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference Books:

1. Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
2. J.M. Lehn, Supra Molecular Chemistry, VCH Publications



A.D. Madhuri
(Chairman - BOS)



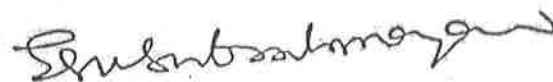
Dr. S. Satyavani
(University Nominee)



Dr. S. Musthafa
(Subject Expert)



Dr. A. Venkateswara Rao
(Subject Expert)



Mr. E. S. V. Subrahmanyam
(Member, BOS)



UNIT IV Polymer Chemistry

12 Hours

Introduction to polymers, functionality of monomers, chain growth and step growth polymerization, coordination polymerization, with specific examples and mechanisms of polymer formation.

Plastics –Thermoand Thermosetting plastics, Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres.

Elastomers–Buna-S, Buna-N–preparation, properties and applications.

Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications. Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA).

UNIT V Instrumental Methods, and Applications

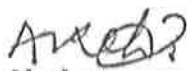
12 Hours

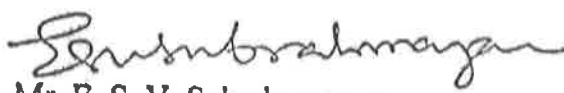
Electromagnetic spectrum. Absorption of radiation: Beer-Lambert's law. UV-Visible Spectroscopy, electronic transition, Instrumentation, IR spectroscopies, fundamental modes and selection rules, Instrumentation. Chromatography-Basic Principle, Classification-HPLC: Principle, Instrumentation and Applications.


A. D. Madhuri
(Chairman - BOS)


Dr. S. Satyavani
(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

8



**BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU (AUTONOMOUS)**

Department of Civil Engineering

3

(23ESIT01D)

I YEAR I SEM	Course Code : 23ES2T01	L	T	P	C
		3	0	0	3

Course Title: BASIC CIVIL AND MECHANICAL ENGINEERING

PART A: BASIC CIVIL ENGINEERING

Course Objectives:

- Get familiarized with the scope and importance of Civil Engineering sub-divisions.
- Introduce the preliminary concepts of surveying.
- Acquire preliminary knowledge on Transportation and its importance in nation's economy.
- Get familiarized with the importance of quality, conveyance and storage of water.
- Introduction to basic civil engineering materials and construction techniques.

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

- CO1:** Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society.
- CO2:** Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying.
- CO3:** Realize the importance of Transportation in nation's economy and the engineering measures related to Transportation.
- CO4:** Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated.
- CO5:** Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.

UNIT I

Basics of Civil Engineering: Role of Civil Engineers in Society- Introduction to Civil Engineering Construction Materials-Cement - Aggregate -Bricks- Cement concrete- Steel- Bitumen-Building Planning & Construction Techniques-Introduction to Prefabricated Construction Techniques.

UNIT II

Geotechnical Engineering: Introduction to Properties of soils- Permeability & Seepage- Shear strength-Compaction and Consolidation-Soil exploration-Shallow and Deep Foundations

Structural Engineering: Introduction to Different types of structures-Framed structures- Arches-Suspension bridges-Trusses, Reinforced Concrete Structures-Steel Structures- Design philosophies-Prestressed concrete structures.

Dr. V. Lakshmi, Professor UCEK, JNTU Kakinada. (University Nominee)	Dr. A. Murali Krishna, Professor, IIT Tirupathi	Dr. V. Ranva murthy, Professor, NIT Warangal.	Dr. B. Chandra Sekhar, Director (Technical), Praneeth Engg Dept, Hyderabad (Industrial Expert)	Dr. Venkateswarlu Hasti, Post Doctoral fellow, IISc Bangalore. (Alumni)
(and)	-online-	-online-	-online-	-online-

PROFESSOR
Department of Civil Engineering
University College of Engineering
JNTU KAKINADA

(9)

Head of the Department
Dept. of Civil Engineering
JNTU KAKINADA



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU (AUTONOMOUS)

Department of Civil Engineering

Surveying: Introduction to Objectives of Surveying- Horizontal Measurements- Angular Measurements- Bearings- Levelling- Instruments used for levelling -Contour mapping.

UNIT III

Transportation Engineering Importance of Transportation in Nation's economic development- Introduction to Types of Highway Pavements- Flexible Pavements and Rigid Pavements - Simple Differences. Basics of Harbour, Tunnel, Airport, and Railway Engineering.

Water Resources and Environmental Engineering: Introduction to Sources of water- Hydrology-Rainwater Harvesting-Water Storage and Conveyance Structures. Introduction to Quality of water- Specifications- Treatment-Sewage-Disposal

Textbooks:

1. Basic Civil Engineering, M.S.Palanisamy, , Tata Mcgraw Hill publications (India) Pvt.Ltd. Fourth Edition.
2. Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers.2022. First Edition.
3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

Reference Books:

1. Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019. Fifth Edition.
2. Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi. 2016
3. Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023. 38th Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Vecraraghavan, Nemchand and Brothers Publications 2019. 10th Edition.
5. Indian Standard DRINKING WATER — SPECIFICATION IS 10500-2012.

Dr. V. Lakshmi, Professor UCEK, JNTU Kakinada, (University Nominee)	Dr. A. Murali Krishna, Professor, IIT Tirupathi	Dr. V. Ramna murthy, Professor, NIT Warangal.	Er.B.Chandra Sekhar, Director (Technical), Pranathi Engg Dept, Hyderabad (Industrial Expert)	Dr.Venkateswarlu Hasti, Post Doctoral fellow, IISc Bangalore. (Alumini)
<i>Ceemb</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>

PROFESSOR
Department of Civil Engineering
University College of Engineering
JNTU KAKINADA

(10)

[Signature]
Head of the Department
Dept. of Civil Engineering

I YEAR I SEM	Course Code: 23ES1T01 (for CSE & Allied Branches)	L	T	P	C
I YEAR II SEM	Course Code: 23ES2T01 (for CE, EEE, ME & ECE Branches)	3	0	0	3

BASIC CIVIL AND MECHANICAL ENGINEERING
(Common to All branches of Engineering)

PART B: BASIC MECHANICAL ENGINEERING

Course Objectives: The students after completing the course are expected to

COB1: Get familiarize with the scope and importance of Mechanical Engineering in different sectors & industries.

COB2: Explain different engineering materials and different manufacturing processes.

COB3: Provide an overview of different thermal and mechanical transmission systems and introduce basics of robotics and its applications.

Course Outcomes:

On completion of the course, the student should be able to

CO1: Understand the different manufacturing processes.

CO2: Explain the basics of thermal engineering and its applications.

CO3: Describe the working of different mechanical power transmission systems and power plants.

CO4: Describe the basics of robotics and its applications.

UNIT I

UNIT I Introduction to Mechanical Engineering: Role of Mechanical Engineering in Industries and Society-Technologies in different sectors such as Energy, Manufacturing, Automotive, Aerospace, and Marine sectors. Engineering Materials - Metals-Ferrous and Non-ferrous, Ceramics, Composites, Smart materials

UNIT II

UNIT II Thermal Engineering – Basic Laws of Thermodynamics, working principle of Boilers, Otto cycle, Diesel cycle, Refrigeration and air-conditioning cycles: Air Refrigeration and Vapour Compression Refrigeration-Working Principles only. Introduction to Pumps and Compressors (Basics, Classification and Applications only), IC engines, 2-Stroke and 4-Stroke engines, SI/CI Engines, Components of Electric and Hybrid Vehicles. Power plants – working principle of Steam, Diesel, Hydro, Nuclear and Combined Cycle power plants (Layout, Working)

Dr. A. Swarna Kumari Professor in ME Dept.,UCEK (A), JNTUK	Dr. K. Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murthy, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

UNIT III

UNIT III. Manufacturing Processes: Principles of Casting, Forming, joining processes, Machining, Introduction to CNC machines, 3D printing, and Smart manufacturing.

Mechanical Power Transmission - Belt Drives, Chain, Rope drives, Gear Drives and their applications.

Introduction to Robotics - Joints & links, configurations, and applications of robotics.

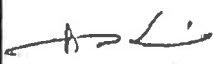
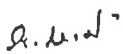
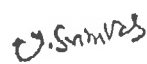
(NOTE: The subject covers only the basic principles of Civil and Mechanical Engineering systems. The evaluation shall be intended to test only the fundamentals of the subject)

Textbooks:

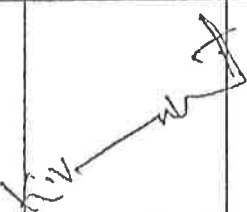
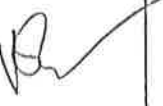
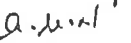
1. Internal Combustion Engines by V.Ganesan, By Tata McGraw Hill publications (India) Pvt. Ltd.
2. A Tear book of Theory of Machines by S.S. Rattan, Tata McGraw Hill Publications, (India) Pvt. Ltd.
3. An introduction to Mechanical Engg by Jonathan Wicker and Kemper Lewis, Cengage learning India Pvt. Ltd.

Reference Books:

1. AppuKuttan KK, Robotics, I.K. International Publishing House Pvt. Ltd. Volume-I
2. 3D printing & Additive Manufacturing Technology- L. Jyothish Kumar, Pulak M Pandey, Springer publications
3. Thermal Engineering by Mahesh M Rathore Tata McGraw Hill publications (India) Pvt. Ltd.
4. G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, Tata McGraw Hill publications (India) Pvt. Ltd.

					
Dr. A. Swarna Kumari Professor in ME Dept.,UCEK (A), JNTUK	Dr. K Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

I YEAR I SEM I YEAR II SEM	Course Code : 23ES1T03 (for CSE & Allied Branches)	L	T	P	C
	Course Code : 23ES2T03 (for CE, EEE, ME & ECE Branches)	1	0	4	3
ENGINEERING GRAPHICS					
UNIT I Introduction: Lines, Lettering and Dimensioning, Geometrical Constructions and constructing regular polygons by general methods only. Curves: construction of ellipse, parabola and hyperbola by general method only, Cycloids, Involute, Normal and tangent to Curves. Scales: Plain scales, diagonal scales					
UNIT II Orthographic Projections: Reference plane, importance of reference lines or Plane, Projections of a point situated in any one of the four quadrants. Projections of Straight Lines: Projections of straight lines parallel to both reference planes, perpendicular to one reference plane and parallel to other reference plane, inclined to one reference plane and parallel to the other reference plane. Projections of Straight Line Inclined to both the reference planes Projections of Planes: regular planes Perpendicular to both reference planes, parallel to one reference plane and inclined to the other reference plane; plane inclined to both the reference planes.					
UNIT III Projections of Solids: Types of solids: Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane and Axis parallel to both the reference planes, Projection of Solids with axis inclined to one reference plane and parallel to another plane.					

					
Dr. A. Swarna Kumari Professor in ME Dept., UCEK (A), JNTUK	Dr. K Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

UNIT-IV

Basic Concept of Sections of Solids: Sections of Solids in simple positions (Cone, Prism, Pyramid)

Development of Surfaces: Methods of Development: Parallel line development and radial line development.
Development of a cube, prism, cylinder, pyramid and cone..

UNIT V

Conversion of Views: Conversion of isometric views to orthographic views; Conversion of orthographic views to isometric views.

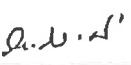
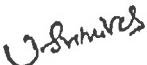
Computer graphics: Creating 2D & 3D drawings of objects including PCB and Transformations using Auto CAD (Not for end examination).

Text Books:

1. N. D. Bhatt, Engineering Drawing, Charotar Publishing House, 2016.

Reference Books:

1. Engineering Drawing, K.L. Narayana and P. Kanniah, Tata McGraw Hill, 2013.
 2. Engineering Drawing, M.B.Shah and B.C. Rana, Pearson Education Inc, 2009.
- Engineering Drawing with an Introduction to AutoCAD, Dhananjay Jolhe, TataMcGraw Hill, 2017.

					
Dr. A. Swarna Kumari Professor in ME Dept.,UCEK (A), JNTUK	Dr. K. Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

B223-2-I-AIDS-5

7

I Year - I Semester	Code: 23ES1T04	L	T	P	C
		3	0	0	3

INTRODUCTION TO PROGRAMMING (Common to All branches of Engineering)

Course Objectives:

- To introduce students to the fundamentals of computer programming.
- To provide hands-on experience with coding and debugging.
- To foster logical thinking and problem-solving skills using programming.
- To familiarize students with programming concepts such as data types, control structures, functions, and arrays.
- To encourage collaborative learning and teamwork in coding projects.

Course Outcomes:

A student after completion of the course will be able to

CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking.

CO2: Analyze a problem and develop an algorithm to solve it.

CO3: Implement various algorithms using the C programming language.

CO4: Understand more advanced features of C language.

CO5: Develop problem-solving skills and the ability to debug and optimize the code.

UNIT-I: Introduction to Programming and Problem Solving: Computer System: History of Computers, Introduction to Components of Computer-System, compilation and execution, Program Counter Basics of a Computer Program-. Programming Languages and History of C, Basics Structure of a Computer Program, Software Development Process: Characteristics Algorithm, Flowchart, Pseudo Code, Header file, Errors in compilation time, Primitive Data Types, Formatted I/O's, Format Modifiers. Variable Rules, Keywords, Constants, String and Operators. Type Conversions, Priority Table Problemsolving strategies: Top-down and Bottom-up approach, Time and space complexities.

UNIT-II: Control Structures (Flow of Controls):

Decision Branching Statement (Selection): Two-way selection: if, if-else, nested if

Multi-way selection: switch, else-if ladder

Decision Looping Statement (Repetition/Iterative): while (Pretest/Condition-Controlled Loops) and do-while (Post test) Loops, for loop (Counter Controlled) and Unconditional statements, Nested Loops

UNIT-III Arrays & Pointers:

Arrays: Arrays definition and indexing, Types of Arrays

One-Dimensional Arrays: Initialization, declaration and accessing, input and output of array

Two-Dimensional Arrays: Initialization, declaration, accessing, input and output of array

Case Study: Matrices, Larger Dimensional Arrays

Pointers: Concept of a pointer, Initialization of pointer variables and access, Pointer dereferencing and address operators, array manipulation using pointers, Dynamic Memory Management functions, pointers to pointers, command line arguments

H.R. Kulkarni	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmedabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML), CMR Technical Campus, Hyd	Dr. B S N Murthy, Professor of CSE, BVCEC.

Professor

Department of CSE

15

UNIT-IV: Functions & Strings:

Functions: Definition of Function, Categorization of User define functions, Local, Global variables and Actual and Formal parameters, Scope life time variables, pass by value and reference, Recursive function

Case Study: Factorial, Fibonacci Series, Basics of Sorting/and Searching

Strings: Introduction to String, String Handling Functions

UNIT-V: User Defined Data Types & File Handling:

User Defined Data Types: Structures: declaration, Initialization, accessing, nested structures, self-referential structure, structures to array, pointer and functions, Union, typedef and enum

File Handling: Basics of File Handling (only if time is available, otherwise should be done as part of the lab).

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, Second Edition 2015.
2. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill, Second Edition.
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1. Computing fundamentals and C Programming, E Balagurusamy, McGraw- Hill Education.
2. Programming in C, Rema Therafa, Oxford, 2016, 2nd edition
3. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage
4. C Programming- A Beginners Guide by Prof. Mangesh, Dr. D R Shashirag, Prof. Bodapati Narasimha Rao, Prof. B P N Madhu Kumar.

<i>H. R. K. K.</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

Professor

Department of CSE
University College of Engg.
JNTUK Kakinada.

CHEMISTRY LAB

(Common to EEE, ECE, CSE & Allied, IT)
(AIDS)

23BS1L02
23BS1L02 [CSE, Allied, IT, EEE]
23BS2L02 [EEE, ECE]

Course Objectives:

- Verify the fundamental concepts with experiments.

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

- Determine the cell constant and conductance of solutions.
- Prepare advanced polymer Bakelite materials.
- Measure the strength of an acid present in secondary batteries.
- Analyze the IR spectra of some organic compounds.

List of Experiments:

1. Measurement of 10Dq by spectrophotometric method
2. Conductometric titration of strong acid vs. strong base
3. Conductometric titration of weak acid vs. strong base
4. Determination of cell constant and conductance of solutions
5. Potentiometry - determination of redox potentials and emfs
6. Determination of Strength of an acid in Pb-Acid battery
7. Preparation of a Bakelite
8. Verify Lambert-Beer's law
9. Wavelength measurement of sample through UV-Visible Spectroscopy
10. Identification of simple organic compounds by IR
11. Preparation of nanomaterials by precipitation method
12. Estimation of Ferrous Iron by Dichrometry

Reference:

- "Vogel's Quantitative Chemical Analysis 6th Edition 6th Edition" Pearson Publications by J. Mendham, R.C. Denney, J.D. Barnes and B. Sivasankar


A.D. Madhuri

(Chairman - BOS)


Dr. S. Satya Veni

(University Nominee)


Dr. S. Musthafa

(Subject Expert)



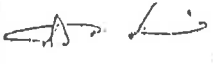
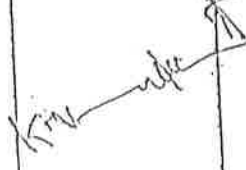
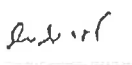
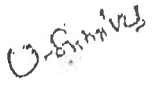
Dr. A. Venkateswara Rao
(Subject Expert)



Mr. E. S. V. Subrahmanyam
(Member, BOS)

(17)

YEAR I SEM YEAR II SEM	Course Code : 23ES1L02 (for CSE & Allied Branches) (AIDS)	2	L	T	P	C
	Course Code : 23ES2L02 (for CE, EEE, ME & ECE Branches)		0	0	3	1.5
ENGINEERING WORKSHOP (Common to All branches of Engineering)						
1. Demonstration: Safety practices and precautions to be observed in workshop.						
2. Wood Working: Familiarity with different types of woods and tools used in wood working and make following joints: a) Half-Lap joint b) Mortise and Tenon joint and c) Corner Dovetail joint or Bridle joint						
3. Sheet Metal Working: Familiarity with different types of tools used in sheet metal working, Developments of following sheet metal jobs from GI sheets: a) Tapered tray b) Elbow pipe c) Brazing						
4. Fitting: Familiarity with different types of tools used in fitting and do the following fitting exercises: a) V-fit b) Semi-circular fit c) Bicycle tyre puncture and change of two-wheeler tyre.						
5. Electrical Wiring: Familiarity with different types of basic electrical circuits and make the following connections: a) Parallel and series b) Two-way switch c) Godown lighting d) Tube Light e) Soldering of wires						
6. Foundry Trade: Demonstration and practice on Moulding tools and processes, Preparation of Green Sand Moulds for given Pattern.						

					
Dr. A. Swarna Kumari Professor in ME Dept., UCEK (A), JNTUK.	Dr. K. Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

7. Welding Shop: Demonstration and practice on Arc Welding and Gas welding. Preparation of Lap joint and Butt joint.

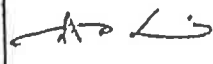
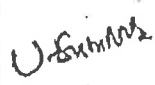
8. Plumbing: Demonstration and practice of Plumbing tools, Preparation of Pipe joints with coupling for same diameter and with reducer for different diameters

Text Books:

1. Basic Workshop Technology: Manufacturing Process, Felix W.; Independently Published, 2019.
2. Workshop Processes, Practices and Materials; Bruce J. Black, Routledge publishers, 5th Edn. 2015.
3. A Course in Workshop Technology Vol I. & II, B.S. Raghuvanshi, Dhanpath Rai & Co., 2015 & 2017.

Reference Books:

1. Elements of Workshop Technology, Vol. I by S. K. Hajra Choudhury & Others, Media Promoters and Publishers, Mumbai. 2007, 14th edition
2. Workshop Practice by H. S. Bawa, Tata-McGraw Hill, 2004.
3. Wiring Estimating, Costing and Contracting; Soni P.M. & Upadhyay P.A.; Atul Prakashan, 2021-22

					
Dr. A. Swarna Kumari Professor in ME Dept., UCEK (A), JNTUK	Dr. K Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEO(A)
Member- Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

(19)

I Year - I Semester	Code: 23ESIL03	L	T	P	C
		0	0	2	1
IT WORKSHOP (Common to CSE/CSE(AI&DS)/ CSE(AIML)/AIML)					
Course Objectives: - To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables - To demonstrate configuring the system as Dual boot both Windows and other Operating Systems Viz. Linux, BOSS - To teach basic command line interface commands on Linux. - To teach the usage of Internet for productivity and self-paced life-long learning - To introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools					
Course Outcomes: CO1: Perform Hardware troubleshooting. CO2: Understand Hardware components and inter dependencies. CO3: Safeguard computer systems from viruses/worms. CO4: Document/ Presentation preparation. CO5: Perform calculations using spreadsheets					
PC Hardware & Software Installation Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor. Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content. Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva. Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot (VMWare) with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva. Task 5: Every student should install BOSS on the computer. The system should be configured as dual boot (VMWare) with both Windows and BOSS. Lab instructors should verify the installation and follow it up with a Viva					
Internet & World Wide Web Task1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.					

Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	online Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	online Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	online Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	online Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd.	Dr. B S N Murthy Professor of CSE, BVCEC.
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Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

LaTeX and WORD

Task 1 – Word Orientation: The mentor needs to give an overview of La TeX and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of La TeX and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using La TeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 2: Using LaTeX and Word to create a project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both La TeX and Word.

Task 3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

EXCEL

Excel Orientation: The mentor needs to tell the importance of MS office or equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text

Task 2: Calculating GPA - Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function,

LOOKUP/VLOOKUP

Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting

H. R. K. K.	online	online	online	online	planning
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Hyderabad, Department of CSE College of ENGG.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AI ML) CMR Technical Campus, Hyd.	Dr. B S N Murthy Professor of CSE, BVCEC.

POWERPOINT

Task 1: Students will be working on basic power point utilities and tools which help them create basic power point presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.

Task 2: Interactive presentations - Hyperlinks, Inserting - Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide sorter, notes etc), and Inserting - Background, textures, Design Templates, Hidden slides.

AI TOOLS - ChatGPT

Task 1: Prompt Engineering: Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them.

• Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of France?"

Task 2: Creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas

Ex: Prompt: "In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality."

Task 3: Language Translation: Experiment with translation tasks by providing a sentence in one language and asking the model to translate it into another language. Compare the output to see how accurate and fluent the translations are.

Ex: Prompt: "Translate the following English sentence to French: 'Hello, how are you doing today?'"

Text Books:

Reference Books:

1. Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
2. The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech, 2013, 3rd edition
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, 2012, 2nd edition

Reference Books:

4. PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft)
5. LaTeX Companion, Leslie Lamport, PHI/Pearson.
6. IT Essentials PC Hardware and Software Companion Guide, David Anfinson and Ken Quamme. - CISCO Press, Pearson Education, 3rd edition
7. IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan - CISCO Press, Pearson Education, 3rd edition

N. R. Rao	online	online	online	online	online
Dr. N. Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, IIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy, Professor of CSE, BVCEC.

I Year - I Semester	Code: 23ES1L04	L	T	P	C
		0	0	3	1.5
COMPUTER PROGRAMMING LAB (Common to All branches)					
Course Objectives: The course aims to give students hands – on experience and train them on the concepts of the C programming language.					
Course Outcomes: CO1: Read, understand, and trace the execution of programs written in C language. CO2: Select the right control structure for solving the problem. CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers. CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.					
UNIT I WEEK 1: Objective: Getting familiar with the programming environment on the computer and writing the first program. Suggested Experiments/Activities: Tutorial 1: Problem-solving using Computers. Lab1: Familiarization with programming environment i) Basic Linux environment and its editors like Vi, Vim & Emacs etc. ii) Exposure to Turbo C, gcc iii) Writing simple programs using printf(), scanf()					
WEEK 2: Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation. Suggested Experiments /Activities: Tutorial 2: Problem-solving using Algorithms and Flow charts. Lab 2: Converting algorithms/flow charts into C Source code. Developing the algorithms/flowcharts for the following sample programs i) Sum and average of 3 numbers ii) Conversion of Fahrenheit to Celsius and vice versa ii) Simple interest calculation					
WEEK 3: Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants. Suggested Experiments/Activities: Tutorial 3: Variable types and type conversions: Lab 3: Simple computational problems using arithmetic expressions. i) Finding the square root of a given number ii) Finding compound interest iii) Area of a triangle using heron's formulae iv) Distance travelled by an object					

<i>H. R. ...</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>	<i>online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HOD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor of CSE					

UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial 4: Operators and the precedence and as associativity:

Lab 4: Simple computational problems using the operator' precedence and associativity

- Evaluate the following expressions.
 - $A+B*C+(D*E)+F*G$
 - $A/B*C-B+A*D/3$
 - $A+++B---A$
 - $J=(i++)+(++i)$
- Find the maximum of three numbers using conditional operator
- Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5:

Objective: Explore the full scope of different variants of "if construct" namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

- Write a C program to find the max and min of four numbers using if-else.
- Write a C program to generate electricity bill.
- Find the roots of the quadratic equation.
- Write a C program to simulate a calculator using switch case.
- Write a C program to find the given year is a leap year or not.

WEEK 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

- Find the factorial of given number using any loop.
- Find the given number is a prime or not.
- Compute sine and cos series
- Checking a number palindrome
- Construct a pyramid of numbers.

N. Rao	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE. UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- Find the min and max of a 1-D integer array.
- Perform linear search on 1D array.
- The reverse of a 1D integer array
- Find 2's complement of the given binary number.
- Eliminate duplicate elements in an array.

WEEK 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting

Lab 8: Matrix problems, String operations, Bubble sort

- Addition of two matrices
- Multiplication two matrices
- Sort array elements using bubble sort

WEEK 9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 9: Pointers and dynamic memory allocation

Lab 9: Pointers and memory dereference.

- Write a C program to find the sum of a 1D array using malloc ()
- Enter n students data using calloc () and display failed students list
- Write a C program to implement realloc ()

N.R. Wi	Online	Online	Online	Online	Online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HOD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

Professor

UNIT IV

WEEK 10:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

Tutorial 10: Functions, call by value, scope and extent,

Lab 10: Simple functions using call by value, solving differential equations using Euler's theorem.

- i) Concatenate two strings without built-in functions
- ii) Reverse a string using built-in and without built-in string functions
- iii) Write a C function to find the length of a string.
- iv) Write a C function to transpose of a matrix.
- v) Write a C function to demonstrate numerical integration of differential equations using Euler's method

WEEK 11:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions:

Suggested Experiments/Activities:

Tutorial 11: Recursion, recursive calls

Lab 11: Recursive functions

- i) Write a recursive function to generate Fibonacci series.
- ii) Write a recursive function to find the lcm of two numbers.
- iii) Write a recursive function to find the factorial of a number.
- iv) Write a C Program to implement Ackermann function using recursion.
- v) Write a recursive function to find the sum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 12: Call by reference, dangling pointers

Lab 12: Simple functions using Call by reference, Dangling pointers.

- i) Write a C program to swap two numbers using call by reference.
- ii) Demonstrate Dangling pointer problem using a C program.
- iii) Write a C program to copy one string into another using pointer.
- iv) Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

N. Rao	online	online	online	online	gammuthy
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AI/ML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor Department of CSE					

UNIT V

WEEK 13:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 13: Structure, Bitfields, Self-Referential Structures, Linked lists

Lab 13: Structure, Self-Referential Structures, Bitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields

- Write a C program to find the total, average of n students using structures
- Read student name and marks from the command line and display the student details along with the total.
- Create and display a singly linked list using self-referential structure.
- Demonstrate the differences between structures and unions using a C program.
- Write a C program to shift/rotate using bitfields.
- Write a C program to copy one structure variable to another structure of the same type.

WEEK 14:

Objective: To understand data files and file handling with various file I/O functions.

Explore the differences between text and binary files.

Suggested Experiments/Activities:

Tutorial 14: File handling

Lab 14: File operations

- Write a C program to write and read text into a file.
- Write a C program to write and read text into a binary file using fread() and fwrite()
- Copy the contents of one file to another file.
- Write a C program to merge two files into the third file using command-line arguments.
- Find no. of lines, words and characters in a file
- Write a C program to print last n characters of a given file.

Text Books:

- Programming in C - A practical approach by Ajay Mittal, Pearson Education, First Edition.
- Schaum's Outline of Programming with C by Byron S. Gottfried, McGraw Hill, Second Edition.

Reference Books:

- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India
- C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

H. R. B. B.	online	online	online	online	online
Dr. N. R. Murthy, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, JIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmedabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B. S. N. Murthy, Professor of CSE, BVCEC.

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NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

(Common to All branches of Engineering)

23BS1L05(~~CSE,AIDS,AIHL,CSE(AIHL)~~)

23BS2L05 (~~CE,EEE,MEC,ECE~~)

Course Objectives:

The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the student will be able

- CO1: Understand the importance of discipline, character and service motto.
- CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques.
- CO3: Explore human relationships by analyzing social problems.
- CO4: Determine to extend their help for the fellow beings and down trodden people.
- CO5: Develop leadership skills and civic responsibilities.

UNIT I Orientation

General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, careerguidance.

Activities:

- i) Conducting -ice breaking sessions-expectations from the course-knowing personal talents and skills
- ii) Conducting orientations programs for the students -future plans-activities-releasing road map etc.
- iii) Displaying success stories-motivational biopics- award winning movies on societal issues etc.
- iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.


Mrs. A.D. Madhuri
(Chairperson -BOS)

Dr. G. Shyam Kumar
(University Nominee)


S T Naidu
(NSS Programme Officer)


E S V Subrahmanyam
(BOS Member)

UNIT II

Nature & Care Activities:

Nature & Care Activities:

- i) Best out of waste competition.
- ii) Poster and signs making competition to spread environmental awareness.
- iii) Recycling and environmental pollution article writing competition.
- iv) Organising Zero-waste day.
- v) Digital Environmental awareness activity via various social media platforms.
- vi) Virtual demonstration of different eco-friendly approaches for sustainable living.
- vii) Write a summary on any book related to environmental issues.

UNIT III

Community Service Activities:

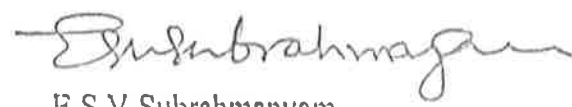
Community Service Activities:

- i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village, identification of problems- helping them to solve via media- authorities-experts-etc.
- ii) Conducting awareness programs on Health-related issues such as General Health, Mental health, Spiritual Health, HIV/AIDS,
- iii) Conducting consumer Awareness. Explaining various legal provisions etc.
- iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
- v) Any other programmes in collaboration with local charities, NGOs etc.


Mrs. A.D. Madhuri
(Chairperson -BOS)

Dr. G. Shyam Kumar
(University Nominee)


S T Naidu


E S V Subrahmanyam

Reference Books:

1. Nirmalya Kumar Sinha & Surajit Majumder, *A Text Book of National Service Scheme* Vol. I, Vidya Kutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. *Red Book - National Cadet Corps* – Standing Instructions Vol I & II, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., "Introduction to Environmental Engineering", McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. "Introduction to Environmental Engineering and Science", Pearson Education, New Delhi. 2/e 2007
5. Ram Ahuja. *Social Problems in India*, Rawat Publications, New Delhi.

General Guidelines:

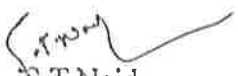
1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting vivavoce on the subject.


Mrs. A.D. Madhuri
(Chairperson –BOS)

Dr. G. Shyam Kumar
(University Nominee)


S T Naidu
(NSS Programme Office)


E S V Subrahmanyam
(BOS Member)



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU – 533 210, Andhra Pradesh, India
Autonomous

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(AI&ML)/AI&ML

Course Structure – BR23

For UG - B.Tech: Computer Science and Engineering
(Artificial Intelligence and Machine Learning)/

Artificial Intelligence and Machine Learning

I Year Course Structure

BR23
 I-I
 AIML
 CSE(AIML)

Semester-I							
S.No.	Course Category	Course Code	Course Name	L	T	P	Credits
1.	BSC	23BS1T01	Linear Algebra & Calculus	3	0	0	3
2.	BSC	23BS1T03	Chemistry	3	0	0	3
3.	ESC	23ES1T01	Basic Civil & Mechanical Engineering	3	0	0	3
4.	ESC	23ES1T03	Engineering Graphics	1	0	4	3
5.	ESC	23ES1T04	Introduction to Programming	3	0	0	3
6.	BSC	23BS1L02	Chemistry Lab	0	0	2	1
7.	ESC	23ES1L02	Engineering Workshop	0	0	3	1.5
8.	ESC	23ES1L03	IT Workshop	0	0	2	1
9.	ESC	23ES1L04	Computer Programming Lab	0	0	3	1.5
10.	BSC	23BS1L05	NSS/NCC/Scouts & Guides/Community Service	0	0	1	0.5
Total				13	0	15	20.5

Dr. K. V. Ramana, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. Jimson Mathew, Professor of CSE, IIT Patna.	Dr. B. D. Sahoo, Professor of CSE, NIT Rourkela.	Mr. K. Rambabu, Director, Monster India Pvt, Bangalore.	Dr. S. Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, East Hyderabad.	Dr. P. Subba Rao, Professor of CSE(AI&ML)/ AI&ML, BVCEC. Head of the CAD, AIML & CSM BVC Engineering College, Odal Godavari, A.P. 533

Professor
 Department of CSE
 University College of Engg.
 JNTUK Kakinada.



01/03/24
 Head of the
 CAD, AIML & CSM
 BVC Engineering College, Odalarevu
 East Godavari, A.P. 533 210

Page ① of 30

01/03/24

Dept. of Science
 BVC Engineering College
 Odalarevu - 533 210
 1/3/24

1 B.TECH I SEMESTER

LINEAR ALGEBRA AND CALCULUS

Course Code: 23BS1T01

(for all)

L	T	P	C
3	0	0	3

Course Objectives:

- To equip the students with standard concepts and tools at an intermediate to advanced level mathematics to develop the confidence and ability among the students to handle various real-world problems and their applications.

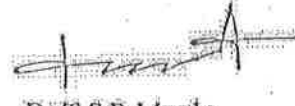
Course Outcomes:

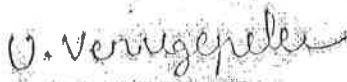
At the end of the course, the student will be able to

- CO1: Develop and use of matrix algebra techniques that are needed by engineers for practical applications.
- CO2: Utilize mean value theorems to real life problems.
- CO3: Familiarize with functions of several variables which is useful in optimization.
- CO4: Learn important tools of calculus in higher dimensions.
- CO5: Familiarize with double and triple integrals of functions of several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deckshilulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalani
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

(2)

UNIT I:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form. Finding two Non Singular matrices when PAQ is in Normal form. Cauchy-Binet formulae (without proof). Inverse of Non-singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method, Electrical Circuits (Application).

UNIT II:- Eigenvalues, Eigenvectors and Orthogonal Transformation

Eigenvalues, 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.

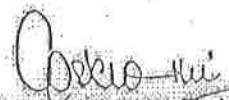
UNIT III:- Calculus

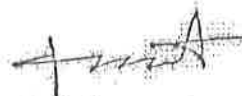
Mean Value Theorems: Rolle's Theorem, Lagrange's mean value theorem with their geometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theorems with remainders (without proof), Problems on the above theorems.

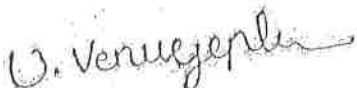
UNIT IV:- Partial differentiation and Applications (Multi variable calculus)

Functions of several variables: Continuity and Differentiability, Partial derivatives, total derivatives, chain rule, Taylor's and Maclaurin's series expansion of functions of two variables. Jacobians, Functional dependence, maxima and minima of functions of two variables, method of Lagrange multipliers.


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshitulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalani
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

(2)

UNIT V:- Multiple Integrals (Multi variable Calculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar, cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (by double integrals and triple integrals)

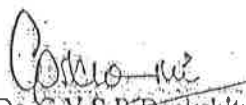
Textbooks:-

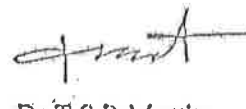
1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, 2017, 44th Edition
2. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons, 2018, 10th Edition.

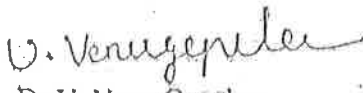
Reference Books:-

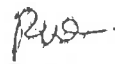
1. Thomas Calculus, George B. Thomas, Maurice D. Weir and Joel Hass, Pearson Publishers, 2018, 14th Edition.
2. Advanced Engineering Mathematics, R. K. Jain and S. R. K. Iyengar, Alpha Science International Ltd., 2021 5th Edition (9th reprint).
3. Advanced Modern Engineering Mathematics, Glyn James, Pearson publishers, 2018, 5th Edition.
4. Advanced Engineering Mathematics, Michael Greenberg, , Pearson publishers, 9th edition
5. Higher Engineering Mathematics, H. K Das, Er. Rajnish Verma, S. Chand Publications, 2014, Third Edition (Reprint 2021)


A.D. Madhuri
(Chairman-BOS)


Dr. G.V.S.R. Deekshittulu
(University Nominee)


Dr. T.S.R. Murthy
(Subject Expert)


Dr. U. Venu Gopalam
(Subject Expert)


Mr. P. Ganga Raju
(Member, BOS)

(4)

BR23-I-I-AIML-CSE(AIML)-(2)

L T P C
3 0 0 3

CHEMISTRY
(Common to EEE, ECE, CSE, AIDS, AIML, CSE(AIML))

2

Course code: 23BS2T03 (EEE, ECE)
23BS1T03 (CSE, AIDS, AIML, CSE(AIML))

Course Objectives:

- To familiarize engineering chemistry and its applications
- To train the students on the principles and applications of electrochemistry and polymers
- To introduce instrumental methods, molecular machines and switches

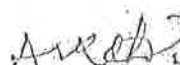
Course Outcomes: At the end of the course, the students will be able to:

- Compare the materials of construction for battery and electrochemical sensors.
- Explain the preparation, properties, and applications of thermoplastics & thermosetting, elastomers & conducting polymers.
- Explain the principles of spectrometry, etc in separation of solid and liquid mixtures.
- Apply the principle of Band diagrams in the application of conductors and semiconductors.


A.D. Madhuri
(Chairman - BOS)


Dr. S. Satyaiah
(University Nominee)


Dr. S. Mustafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

(5)

5

UNIT I Structure and Bonding Models:

12 Hours

Fundamentals of Quantum mechanics, Schrodinger Wave equation, significance of Ψ and Ψ^2 , particle in one dimensional box, molecular orbital theory – bonding in homo- and heteronuclear diatomic molecules – energy level diagrams of O_2 and CO , etc. π -molecular orbitals of butadiene and benzene, calculation of bond order.

UNIT II Modern Engineering materials

12 Hours

Semiconductors, band diagram in solids, Semiconductor devices (p-n junction diode as rectifier and transistors)

Super conductors-Introduction basic concept, applications.

Supercapacitors: Introduction, Basic Concept-Classification – Applications.

Nano materials: Introduction, classification, properties and applications of Fullerenes, carbon nano tubes and Graphines nanoparticles.

UNIT III Electrochemistry and Applications:

12 Hours

Electrochemical cell, Nernst equation, cell potential calculations and numerical problems, potentiometry- potentiometric titrations (redox titrations), concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations).

Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples

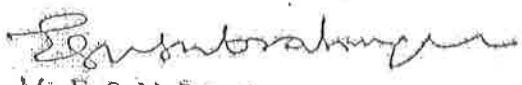
Primary cells – Zinc-air battery, Secondary cells –lithium-ion batteries- working of the batteries including cell reactions; Fuel cells, hydrogen-oxygen fuel cell– working of the cells, Polymer Electrolyte Membrane Fuel cells (PEMFC).


A. D. Madhuri
(Chairman - BOS)


Dr. S. Sanyasi
(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

(6)

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference Books:

1. Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
2. J.M. Lehn, Supra Molecular Chemistry, VCH Publications


A.D. Madhuri
(Chairman - BOS)


Dr. S. Satyavani
(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

(7)

UNIT IV Polymer Chemistry

12 Hours

Introduction to polymers, functionality of monomers, chain growth and step growth polymerization, coordination polymerization, with specific examples and mechanisms of polymer formation.

Plastics -Thermoand Thermosetting plastics, Preparation, properties and applications of - PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres.

Elastomers-Buna-S, Buna-N-preparation, properties and applications.

Conducting polymers - polyacetylene, polyaniline, - mechanism of conduction and applications. Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA).

UNIT V Instrumental Methods, and Applications

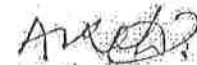
12 Hours

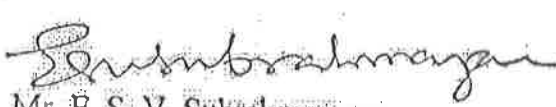
Electromagnetic spectrum. Absorption of radiation: Beer-Lambert's law. UV-Visible Spectroscopy, electronic transition, Instrumentation, IR spectroscopies, fundamental modes and selection rules, Instrumentation. Chromatography-Basic Principle, Classification-HPLC: Principle, Instrumentation and Applications.


A. D. Madhuri
(Chairman - BOS)


Dr. S. Sathyaveni
(University Nominee)


Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

(8)



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU (AUTONOMOUS)

Department of Civil Engineering

3

I YEAR I SEM	Course Code: 23ES2T01 (23ES1701)	L	T	P	C
		3	0	0	3
Course Title: BASIC CIVIL AND MECHANICAL ENGINEERING					
PART A: BASIC CIVIL ENGINEERING					
Course Objectives: • Get familiarized with the scope and importance of Civil Engineering sub-divisions. • Introduce the preliminary concepts of surveying. • Acquire preliminary knowledge on Transportation and its importance in nation's economy. • Get familiarized with the importance of quality, conveyance and storage of water. • Introduction to basic civil engineering materials and construction techniques.					
Course Outcomes: On completion of the course, the student should be able to: CO1: Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society. CO2: Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying. CO3: Realize the importance of Transportation in nation's economy and the engineering measures related to Transportation. CO4: Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated. CO5: Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.					
UNIT I Basics of Civil Engineering: Role of Civil Engineers in Society- Introduction to Civil Engineering Construction Materials-Cement - Aggregate -Bricks- Cement concrete- Steel- Bitumen-Building Planning & Construction Techniques-Introduction to Prefabricated Construction Techniques.					
UNIT II Geotechnical Engineering: Introduction to Properties of soils- Permeability & Seepage- Shear strength-Compaction and Consolidation-Soil exploration-Shallow and Deep Foundations Structural Engineering: Introduction to Different types of structures-Framed structures- Arches-Suspension bridges-Trusses, Reinforced Concrete Structures-Steel Structures- Design philosophies-Prestressed concrete structures.					

Dr. V. Lakshmi, Professor UCEK, JNTU Kakinada. (University Nominee)	Dr. A. Murali Krishna, Professor, JIT Tirpathi	Dr. V. Ramna murthy, Professor, NIT Warangal.	Er. B. Chandra Sekhar, Director (Technical), Pranath Engg Dept, Hyderabad (Industrial Expert)	Dr. Venkateswarlu Hasti, Post Doctoral fellow, IISc Bangalore. (Alumini)
<i>(amb)</i>	<i>-online-</i>	<i>-online-</i>	<i>-online-</i>	<i>-online-</i>

PROFESSOR
Department of Civil Engineering
University College of Engineering
JNTU KAKINADA

19

Head of the Department
Dept. of Civil Engineering
JNTU KAKINADA



BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
ODALAREVU (AUTONOMOUS)

3

Department of Civil Engineering

Surveying: Introduction to Objectives of Surveying- Horizontal Measurements- Angular Measurements- Bearings- Levelling- Instruments used for levelling -Contour mapping.

UNIT III

Transportation Engineering Importance of Transportation in Nation's economic development- Introduction to Types of Highway Pavements- Flexible Pavements and Rigid Pavements - Simple Differences. Basics of Harbour, Tunnel, Airport, and Railway Engineering.

Water Resources and Environmental Engineering: Introduction to Sources of water- Hydrology-Rainwater Harvesting-Water Storage and Conveyance Structures. Introduction to Quality of water- Specifications- Treatment-Sewage-Disposal

Textbooks:

1. Basic Civil Engineering, M.S.Palanisamy, , Tata McGraw Hill publications (India) Pvt.Ltd. Fourth Edition.
2. Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers.2022. First Edition.
3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

Reference Books:

1. Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019. Fifth Edition.
2. Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi. 2016
3. Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023. 38th Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10th Edition.
5. Indian Standard DRINKING WATER — SPECIFICATION IS 10500-2012.

Dr. V. Lakshmi, Professor UCEK, JNTU Kakinada. (University Nominee)	Dr. A. Murali Krishna, Professor, IIT Tirupathi	Dr. V. Ramna murtly, Professor, NIT Warangal.	Er.B.ChandraSekhar, Director (Technical), Praneeth Engg Dept, Hyderabad (Industrial Expert)	Dr.Venkateswarlu Hasti, Post Doctoral fellow, IISc Bangalore. (Alumini)
<i>Ceand</i>	<i>-online-</i>	<i>-online-</i>	<i>-online-</i>	<i>-online-</i>

PROFESSOR
Department of Civil Engineering
University College of Engineering
JNTU KAKINADA

10

[Signature]
Head of the Department
Dept. of Civil Engineering

I YEAR I SEM	Course Code:23ES1T01 (for CSE & Allied Branches)	L	T	P	C
I YEAR II SEM	Course Code:23ES2T01 (for CE, EEE, ME & ECE Branches)	3	0	0	3

BASIC CIVIL AND MECHANICAL ENGINEERING
(Common to All branches of Engineering)

PART B: BASIC MECHANICAL ENGINEERING

Course Objectives: The students after completing the course are expected to

COB1: Get familiarize with the scope and importance of Mechanical Engineering in different sectors & industries.

COB2: Explain different engineering materials and different manufacturing processes.

COB3: Provide an overview of different thermal and mechanical transmission systems and introduce basics of robotics and its applications.

Course Outcomes:

On completion of the course, the student should be able to

CO1: Understand the different manufacturing processes.

CO2: Explain the basics of thermal engineering and its applications.

CO3: Describe the working of different mechanical power transmission systems and power plants.

CO4: Describe the basics of robotics and its applications.

UNIT I

UNIT I Introduction to Mechanical Engineering: Role of Mechanical Engineering in Industries and Society-Technologies in different sectors such as Energy, Manufacturing, Automotive, Aerospace, and Marine sectors. Engineering Materials - Metals-Ferrous and Non-ferrous, Ceramics, Composites, Smart materials

UNIT II

UNIT II Thermal Engineering – Basic Laws of Thermodynamics, working principle of Boilers, Otto cycle, Diesel cycle, Refrigeration and air-conditioning cycles: Air Refrigeration and Vapour Compression Refrigeration-Working Principles only. Introduction to Pumps and Compressors (Basics, Classification and Applications only), IC engines, 2-Stroke and 4-Stroke engines, SI/CI Engines, Components of Electric and Hybrid Vehicles. Power plants – working principle of Steam, Diesel, Hydro, Nuclear and Combined Cycle power plants (Layout, Working)

Dr. A. Swarna Kumari Professor in ME Dept.,UCEK (A), JNTUK	Dr. K Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

UNIT III

UNIT III. Manufacturing Processes: Principles of Casting, Forming, joining processes, Machining, Introduction to CNC machines, 3D printing, and Smart manufacturing.

Mechanical Power Transmission - Belt Drives, Chain, Rope drives, Gear Drives and their applications.
Introduction to Robotics - Joints & links, configurations, and applications of robotics.

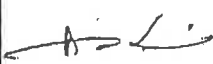
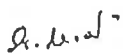
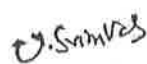
(NOTE: The subject covers only the basic principles of Civil and Mechanical Engineering systems. The evaluation shall be intended to test only the fundamentals of the subject)

Textbooks:

1. Internal Combustion Engines by V.Ganesan, By Tata McGraw Hill publications (India) Pvt. Ltd.
2. A Tear book of Theory of Machines by S.S. Rattan, Tata McGraw Hill Publications, (India) Pvt. Ltd.
3. An introduction to Mechanical Engg by Jonathan Wicker and Kemper Lewis, Cengage learning India Pvt. Ltd.

Reference Books:

1. AppuKuttan KK, Robotics, I.K. International Publishing House Pvt. Ltd. Volume-I
2. 3D printing & Additive Manufacturing Technology- L. Jyothish Kumar, Pulak M Pandey, Springer publications
3. Thermal Engineering by Mahesh M Rathore Tata McGraw Hill publications (India) Pvt. Ltd.
4. G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, Tata McGraw Hill publications (India) Pvt. Ltd.

					
Dr. A. Swarna Kumari Professor in ME Dept.,UCEK (A), JNTUK	Dr. K. Venkata Subbaiah, Professor in M&AE Dept, IITH	Dr. V. Suresh Babu, Professor in ME, NITW	Mr. K M Dakshina Murty, Dy.GM, BHEL	U Srinivas Tech. Asst, ISRO-SHAR Sriharikota	B Srinivas HOD-ME, BVCEC(A)
Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

BR23-2-5-ATML-SECRETARY UG

I YEAR I SEM	Course Code : 23ES1T03 (for CSE & Allied Branches)	L	T	P	C
~~I YEAR I SEM~~	~~Course Code : 23ES2T03~~ (for CE, EEE, ME & ECE Branches)	1	0	4	3
ENGINEERING GRAPHICS					

UNIT I

Introduction: Lines, Lettering and Dimensioning, Geometrical Constructions and constructing regular polygons by general methods only.

Curves: construction of ellipse, parabola and hyperbola by general method only, Cycloids, Involute, Normal and tangent to Curves.

Scales: Plain scales, diagonal scales

UNIT II

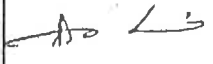
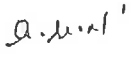
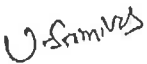
Orthographic Projections: Reference plane, importance of reference lines or Plane, Projections of a point situated in any one of the four quadrants.

Projections of Straight Lines: Projections of straight lines parallel to both reference planes, perpendicular to one reference plane and parallel to other reference plane, inclined to one reference plane and parallel to the other reference plane. Projections of Straight Line Inclined to both the reference planes

Projections of Planes: regular planes Perpendicular to both reference planes, parallel to one reference plane and inclined to the other reference plane; plane inclined to both the reference planes.

UNIT III

Projections of Solids: Types of solids: Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane and Axis parallel to both the reference planes, Projection of Solids with axis inclined to one reference plane and parallel to another plane.

					
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UNIT IV

Basic Concept of Sections of Solids: Sections of Solids in simple positions (Cone, Prism, Pyramid)

Development of Surfaces: Methods of Development: Parallel line development and radial line development.
Development of a cube, prism, cylinder, pyramid and cone..

UNIT V

Conversion of Views: Conversion of isometric views to orthographic views; Conversion of orthographic views to isometric views.

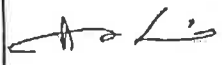
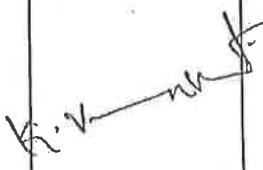
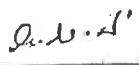
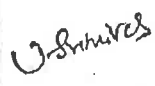
Computer graphics: Creating 2D & 3D drawings of objects including PCB and Transformations using Auto CAD (Not for end examination).

Text Books:

1. N. D. Bhatt, Engineering Drawing, Charotar Publishing House, 2016.

Reference Books:

1. Engineering Drawing, K.L. Narayana and P. Kannaiah, Tata McGraw Hill, 2013.
 2. Engineering Drawing, M.B.Shah and B.C. Rana, Pearson Education Inc, 2009.
- Engineering Drawing with an Introduction to AutoCAD, Dhananjay Jolhe, Tata McGraw Hill, 2017.

					
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Member-Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

(14)

I Year - I Semester	Code: 23ESIT04	L	T	P	C
		3	0	0	3

INTRODUCTION TO PROGRAMMING
(Common to All branches of Engineering)

Course Objectives:

- To introduce students to the fundamentals of computer programming.
- To provide hands-on experience with coding and debugging.
- To foster logical thinking and problem-solving skills using programming.
- To familiarize students with programming concepts such as data types, control structures, functions, and arrays.
- To encourage collaborative learning and teamwork in coding projects.

Course Outcomes:

A student after completion of the course will be able to

CO1: Understand basics of computers, the concept of algorithm and algorithmic thinking.

CO2: Analyze a problem and develop an algorithm to solve it.

CO3: Implement various algorithms using the C programming language.

CO4: Understand more advanced features of C language.

CO5: Develop problem-solving skills and the ability to debug and optimize the code

UNIT-I: Introduction to Programming and Problem Solving: Computer System: History of Computers, Introduction to Components of Computer System, compilation and execution, Program Counter

Basics of a Computer Program-. Programming Languages and History of C, Basics Structure of a Computer Program, Software Development Process: Characteristics Algorithm, Flowchart, Pseudo Code, Header file, Errors in compilation time, Primitive Data Types, Formatted I/O's, Format Modifiers. Variable Rules, Keywords, Constants, String and Operators. Type Conversions, Priority Table

Problemsolving strategies: Top-down and Bottom-up approach, Time and space complexities.

UNIT -II: Control Structures (Flow of Controls):

Decision Branching Statement (Selection): Two-way selection: if, if-else, nested if

Multi-way selection: switch, else-if ladder

Decision Looping Statement (Repetition/Iterative): while (Pretest/Condition-Controlled Loops) and do-while (Post test) Loops, for loop (Counter Controlled) and Unconditional statements, Nested Loops

UNIT-III Arrays & Pointers:

Arrays: Arrays definition and indexing, Types of Arrays

One-Dimensional Arrays: Initialization, declaration and accessing, input and output of array

Two-Dimensional Arrays: Initialization, declaration, accessing, input and output of array

Case Study: Matrices, Larger Dimensional Arrays

Pointers: Concept of a pointer, Initialization of pointer variables and access, Pointer dereferencing and address operators, array manipulation using pointers, Dynamic Memory Management functions, pointers to pointers, command line arguments

H.R. <i>K</i>	online	online	online	online	<i>g</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT-IV: Functions & Strings:

Functions: Definition of Function, Categorization of User define functions, Local, Global variables and Actual and Formal parameters, Scope life time variables, pass by value and reference, Recursive function

Case Study: Factorial, Fibonacci Series, Basics of Sorting/and Searching

Strings: Introduction to String, String Handling Functions

UNIT-V: User Defined Data Types & File Handling:

User Defined Data Types: Structures: declaration, Initialization, accessing, nested structures, self-referential structure, structures to array, pointer and functions, Union, typedef and enum

File Handling: Basics of File Handling (only if time is available, otherwise should be done as part of the lab).

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, Second Edition 2015.
2. Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill, Second Edition.
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1. Computing fundamentals and C Programming, E Balagurusamy, McGraw- Hill Education.
2. Programming in C, Rema Therafa, Oxford, 2016, 2nd edition
3. C Programming- A Problem Solving Approach, Forouzan, Gilberg, Cengage
4. C Programming- A Beginners Guide by Prof. Mangesh, Dr. D R Shashirag, Prof, Bodapati Narasimha Rao, Prof. B P N Madhu Kumar.

H. R. K. K.	online	online	online	online	programming
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd	Dr. B S N Murthy Professor of CSE; BVCEC.

Department of CSE
University College of Engg.
JNTUK Kakinada.

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CHEMISTRY LAB

(Common to EEE, ECE, CSE & Allied, IT)

Course Objectives:

- Verify the fundamental concepts with experiments.

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

- Determine the cell constant and conductance of solutions.
- Prepare advanced polymer Bakelite materials.
- Measure the strength of an acid present in secondary batteries.
- Analyze IR spectra of some organic compounds.

List of Experiments:

1. Measurement of $10Dq$ by spectrophotometric method
2. Conductometric titration of strong acid vs. strong base
3. Conductometric titration of weak acid vs. strong base
4. Determination of cell constant and conductance of solutions
5. Potentiometry - determination of redox potentials and emfs
6. Determination of Strength of an acid in Pb-Acid battery
7. Preparation of a Bakelite
8. Verify Lambert-Beer's law
9. Wavelength measurement of sample through UV-Visible Spectroscopy
10. Identification of simple organic compounds by IR
11. Preparation of nanomaterials by precipitation method
12. Estimation of Ferrous Iron by Dichrometry

Reference:

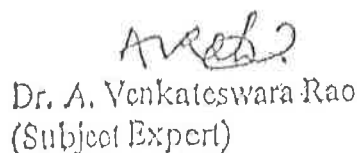
- "Vogel's Quantitative Chemical Analysis 6th Edition 6th Edition" Pearson Publications by J. Mendham, R.C. Denney, J.D. Barnes and B. Sivasankar

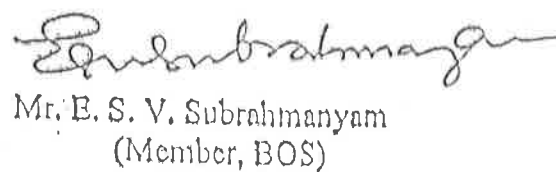

A.D. Madhuri

(Chairman - BOS)


Dr. S. Satyavani
(University Nominee)

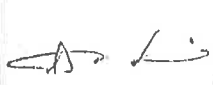
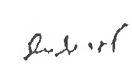
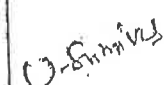

Dr. S. Musthafa
(Subject Expert)


Dr. A. Venkateswara Rao
(Subject Expert)


Mr. E. S. V. Subrahmanyam
(Member, BOS)

BR23-1-1-A(M)

I YEAR I SEM ~~I YEAR II SEM~~	Course Code : 23ES1L02 (for CSE & Allied Branches)	2	L	T	P	C
	Course Code : 23ES2L02 (for CE, EEE, ME & ECE Branches)		0	0	3	1.5
ENGINEERING WORKSHOP (Common to All branches of Engineering)						
1. Demonstration: Safety practices and precautions to be observed in workshop.						
2. Wood Working: Familiarity with different types of woods and tools used in wood working and make following joints: a) Half- Lap joint b) Mortise and Tenon joint and c) Corner Dovetail joint or Bridle joint						
3. Sheet Metal Working: Familiarity with different types of tools used in sheet metal working, Developments of following sheet metal jobs from GI sheets: a) Tapered tray b) Elbow pipe c) Brazing						
4. Fitting: Familiarity with different types of tools used in fitting and do the following fitting exercises: a) V-fit b) Semi-circular fit c) Bicycle tyre puncture and change of two-wheeler tyre.						
5. Electrical Wiring: Familiarity with different types of basic electrical circuits and make the following connections: a) Parallel and series b) Two-way switch c) Godown lighting d) Tube Light e) Soldering of wires						
6. Foundry Trade: Demonstration and practice on Moulding tools and processes, Preparation of Green Sand Moulds for given Pattern.						

					
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7. Welding Shop: Demonstration and practice on Arc Welding and Gas welding. Preparation of Lap joint and Butt joint.

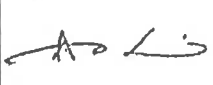
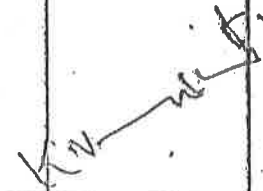
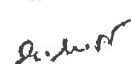
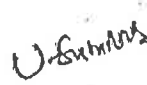
8. Plumbing: Demonstration and practice of Plumbing tools, Preparation of Pipe joints with coupling for same diameter and with reducer for different diameters

Text Books:

1. Basic Workshop Technology: Manufacturing Process, Felix W.; Independently Published, 2019.
2. Workshop Processes, Practices and Materials; Bruce J. Black, Routledge publishers, 5th Edn. 2015.
3. A Course in Workshop Technology Vol I, & II, B.S. Raghuwanshi, Dhanpath Rai & Co., 2015 & 2017.

Reference Books:

1. Elements of Workshop Technology, Vol. I by S. K. Hajra Choudhury & Others, Media Promoters and Publishers, Mumbai. 2007, 14th edition
2. Workshop Practice by H. S. Bawa, Tata-McGraw Hill, 2004.
3. Wiring Estimating, Costing and Contracting; Soni P.M. & Upadhyay P.A.; Atul Prakashan, 2021-22

					
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Member- Affiliating Univ. Nominee	Subject Expert	Subject Expert	Industry Expert	PG Alumni	Chairperson -BOS

Q223 - I - I - AIML - CSE(AIML) - (8) 2

I Year - I Semester	Code: 23ESIL03	L	T	P	C
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IT WORKSHOP (Common to ~~CSE~~ /CSE(AI&DS)/ CSE(AIML)/AIML)					
Course Objectives: • To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables • To demonstrate configuring the system as Dual boot both Windows and other Operating Systems Viz. Linux, BOSS • To teach basic command line interface commands on Linux. • To teach the usage of Internet for productivity and self-paced life-long learning • To introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools					
Course Outcomes: CO1: Perform Hardware troubleshooting. CO2: Understand Hardware components and inter dependencies. CO3: Safeguard computer systems from viruses/worms. CO4: Document/ Presentation preparation. CO5: Perform calculations using spreadsheets					
PC Hardware & Software Installation Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor. Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content. Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva. Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot (VMWare) with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva. Task 5: Every student should install BOSS on the computer. The system should be configured as dual boot (VMWare) with both Windows and BOSS. Lab instructors should verify the installation and follow it up with a Viva					
Internet & World Wide Web Task1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.					

Dr. N	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd.	Dr. B S N Murthy Professor of CSE, BVCEC.

Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

LaTeX and WORD

Task 1 – Word Orientation: The mentor needs to give an overview of La TeX and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of La TeX and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using La TeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 2: Using LaTeX and Word to create a project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both La TeX and Word.

Task 3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

EXCEL

Excel Orientation: The mentor needs to tell the importance of MS office or equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text

Task 2: Calculating GPA -. Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function,

LOOKUP/VLOOKUP

Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting

H. R. Rao	online	online	online	online	gammam
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Hyderabad.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyd.	Dr. B S N Murthy Professor of CSE, BVCEC.

POWER POINT

Task 1: Students will be working on basic power point utilities and tools which help them create basic power point presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.

Task 2: Interactive presentations - Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), and Inserting – Background, textures, Design Templates, Hidden slides.

AI TOOLS – ChatGPT

Task 1: Prompt Engineering: Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them.

- Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of France?"

Task 2: Creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas

Ex: Prompt: "In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality."

Task 3: Language Translation: Experiment with translation tasks by providing a sentence in one language and asking the model to translate it into another language. Compare the output to see how accurate and fluent the translations are.

Ex: Prompt: "Translate the following English sentence to French: 'Hello, how are you doing today?'"

Text Books:

Reference Books:

1. Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
2. The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech, 2013, 3rd edition
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, 2012, 2nd edition

Reference Books:

4. PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft)
5. LaTeX Companion, Leslie Lamport, PHI/Pearson.
6. IT Essentials PC Hardware and Software Companion Guide, David Anfins on and Ken Quamme. - CISCO Press, Pearson Education, 3rd edition
7. IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan- CISCO Press, Pearson Education, 3rd edition

N.R. vic	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

I Year - I Semester	Code: 23ES1L04	L	T	P	C
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COMPUTER PROGRAMMING LAB
(Common to All branches)

Course Objectives:

The course aims to give students hands – on experience and train them on the concepts of the C programming language.

Course Outcomes:

- CO1: Read, understand, and trace the execution of programs written in C language.
 CO2: Select the right control structure for solving the problem.
 CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers.
 CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.

UNIT I

WEEK 1:

Objective: Getting familiar with the programming environment on the computer and writing the first program.

Suggested Experiments/Activities:

Tutorial 1: Problem-solving using Computers.

Lab 1: Familiarization with programming environment

- Basic Linux environment and its editors like Vi, Vim & Emacs etc.
- Exposure to Turbo C, gcc
- Writing simple programs using printf(), scanf()

WEEK 2:

Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation.

Suggested Experiments /Activities:

Tutorial 2: Problem-solving using Algorithms and Flow charts.

Lab 2: Converting algorithms/flow charts into C Source code.

Developing the algorithms/flowcharts for the following sample programs

- Sum and average of 3 numbers
- Conversion of Fahrenheit to Celsius and vice versa
- Simple interest calculation

WEEK 3:

Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants.

Suggested Experiments/Activities:

Tutorial 3: Variable types and type conversions:

Lab 3: Simple computational problems using arithmetic expressions.

- Finding the square root of a given number
- Finding compound interest
- Area of a triangle using heron's formulae
- Distance travelled by an object

N. R. C. C.	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy, Professor of CSE, BVCEC.
Professor of CSE					

UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial 4: Operators and the precedence and as associativity:

Lab 4: Simple computational problems using the operator's precedence and associativity

i) Evaluate the following expressions.

a. $A+B*C+(D*E) + F*G$

b. $A/B*C-B+A*D/3$

c. $A+++B---A$

d. $J=(i++) + (++i)$

ii) Find the maximum of three numbers using conditional operator

iii) Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5:

Objective: Explore the full scope of different variants of "if construct" namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

i) Write a C program to find the max and min of four numbers using if-else.

ii) Write a C program to generate electricity bill.

iii) Find the roots of the quadratic equation.

iv) Write a C program to simulate a calculator using switch case.

v) Write a C program to find the given year is a leap year or not.

WEEK 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

i) Find the factorial of given number using any loop.

ii) Find the given number is a prime or not.

iii) Compute sine and cos series

iv) Checking a number palindrome

v) Construct a pyramid of numbers.

W. R. S. R.	online	online	online	online	online
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIIML), CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- Find the min and max of a 1-D integer array.
- Perform linear search on 1D array.
- The reverse of a 1D integer array
- Find 2's complement of the given binary number.
- Eliminate duplicate elements in an array.

WEEK 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting

Lab 8: Matrix problems, String operations, Bubble sort

- Addition of two matrices
- Multiplication two matrices
- Sort array elements using bubble sort

WEEK 9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 9: Pointers and dynamic memory allocation

Lab 9: Pointers and memory dereference.

- Write a C program to find the sum of a 1D array using malloc ()
- Enter n students data using calloc () and display failed students list
- Write a C program to implement realloc ()

<i>N. R. ...</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>	<i>Online</i>
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AJML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.

UNIT IV

WEEK 10:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

Tutorial 10: Functions, call by value, scope and extent,

Lab 10: Simple functions using call by value, solving differential equations using Euler's theorem.

- i) Concatenate two strings without built-in functions
- ii) Reverse a string using built-in and without built-in string functions
- iii) Write a C function to find the length of a string.
- iv) Write a C function to transpose of a matrix.
- v) Write a C function to demonstrate numerical integration of differential equations using Euler's method

WEEK 11:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions.

Suggested Experiments/Activities:

Tutorial 11: Recursion, recursive calls

Lab 11: Recursive functions

- i) Write a recursive function to generate Fibonacci series.
- ii) Write a recursive function to find the lcm of two numbers.
- iii) Write a recursive function to find the factorial of a number.
- iv) Write a C Program to implement Ackermann function using recursion.
- v) Write a recursive function to find the sum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 12: Call by reference, dangling pointers

Lab 12: Simple functions using Call by reference, Dangling pointers.

- i) Write a C program to swap two numbers using call by reference.
- ii) Demonstrate Dangling pointer problem using a C program.
- iii) Write a C program to copy one string into another using pointer.
- iv) Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

K. R. ...	online	online	online	online	gymnasium
Dr. N Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada.	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B S N Murthy Professor of CSE, BVCEC.
Professor Department of CSE					

UNIT V

WEEK 13:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 13: Structure, Bitfields, Self-Referential Structures, Linked lists

Lab 13: Structure, Self-Referential Structures, Bitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields

- Write a C program to find the total, average of n students using structures
- Read student name and marks from the command line and display the student details along with the total.
- Create and display a singly linked list using self-referential structure.
- Demonstrate the differences between structures and unions using a C program.
- Write a C program to shift/rotate using bitfields.
- Write a C program to copy one structure variable to another structure of the same type.

WEEK 14:

Objective: To understand data files and file handling with various file I/O functions.

Explore the differences between text and binary files.

Suggested Experiments/Activities:

Tutorial 14: File handling

Lab 14: File operations

- Write a C program to write and read text into a file.
- Write a C program to write and read text into a binary file using fread() and fwrite()
- Copy the contents of one file to another file.
- Write a C program to merge two files into the third file using command-line arguments.
- Find no. of lines, words and characters in a file
- Write a C program to print last n characters of a given file.

Text Books:

- Programming in C - A practical approach by Ajay Mittal, Pearson Education, First Edition.
- Schaum's Outline of Programming with C by Byron S. Gottfried, McGraw Hill, Second Edition.

Reference Books:

- Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India
- C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

H. R. R. R.	online	online	online	online	online
Dr. N. Ramakrishnaiah, Professor of CSE, UCEK, JNTUK Kakinada, Professor	Dr. C Krishna Mohan, Professor of CSE, IIT Hyderabad.	Dr. P Radha Krishna, Professor of CSE, NIT Warangal.	Narayana Rao Routhu, Technology Manager, Hidden Brains, Ahmadabad.	Dr. S Rao Chintalapudi, Professor and HoD, CSE(AIML) CMR Technical Campus, Hyderabad.	Dr. B. S. N. Murthy, Professor of CSE, BVCEC.

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NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

(Common to All branches of Engineering)

23BS1L05((CSE,AIDS,AIML,CSE(AIML))

23BS2L05 (CE,EEE,MEC,ECE)

Course Objectives:

The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the student will be able

- CO1: Understand the importance of discipline, character and service motto.
- CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques.
- CO3: Explore human relationships by analyzing social problems.
- CO4: Determine to extend their help for the fellow beings and downtrodden people.
- CO5: Develop leadership skills and civic responsibilities.

UNIT I Orientation

General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

Activities:

- i) Conducting -ice breaking sessions-expectations from the course-knowing personal talents and skills
- ii) Conducting orientations programs for the students -future plans-activities-releasing road map etc.
- iii) Displaying success stories-motivational biopics- award winning movies on societal issues etc.
- iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.

Mrs. A.D. Madhuri
(Chairperson -BOS)

Dr. G. Shyam Kumar
(University Nominee)

S T Naidu
(NSS Programme Officer)

E S V Subrahmanyam
(BOS Member)

UNIT II

Nature & Care Activities:

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- i) Best out of waste competition
- ii) Poster and signs making competition to spread environmental awareness
- iii) Recycling and environmental pollution article writing competition
- iv) Organising Zero-waste day.
- v) Digital Environmental awareness activity via various social media platforms
- vi) Virtual demonstration of different eco-friendly approaches for sustainable living
- vii) Write a summary on any book related to environmental issues

UNIT III

Community Service Activities:

- i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village, identification of problems- helping them to solve via media- authorities-experts-etc.

- ii) Conducting awareness programs on Health-related issues such as General Health, Mental health, Spiritual Health, HIV/AIDS.
- iii) Conducting consumer Awareness. Explaining various legal provisions etc.
- iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
- v) Any other programmes in collaboration with local charities, NGOs etc.

- i) G
- ii) P1
- iii) P1

Mrs. A.
(Chairperson)

Mrs. A. D. Madhuri
(Chairperson - DOS)

Dr. G. Shyam Kumar
(University Nominee)

S T Naidu

E S V Subrahmanyam

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Reference Books:

1. Nirmalya Kumar Sinha & Surajit Majumder, *A Text Book of National Service Scheme* Vol. I, Vidya Kutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. *Red Book - National Cadet Corps - Standing Instructions Vol I & II*, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., "Introduction to Environmental Engineering", McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. "Introduction to Environmental Engineering and Science", Pearson Education, New Delhi. 2/e 2007
5. Ram Ahuja. *Social Problems in India*, Rawat Publications, New Delhi.

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

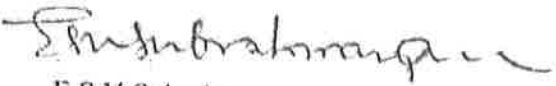
Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.


Mrs A.D. Madhuri
(Chairperson -BOS)

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