COMMUNICATIVE ENGLISH
(Common to all branches)

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COURSE CODE:20HM1T01(CE,EE,MEC,ECE)

20HM2T01(CSE,CSE(AIDS),AIML,CSE(AIML))

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

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.

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 processesor 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. Rout ledge, 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

I B.TECH - I SEMESTER

LINEAR ALGEBRA & CALCULUS

(Common to All Branches of Engineering)

Subject code: 23BS1T01

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CourseObjectives:-

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

CourseOutcomes:-

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 tripleintegralsof functionsof several variables in two dimensions using Cartesian and polar coordinates and in three dimensions using cylindrical and spherical coordinates.

UNITI:- Matrices

Linear Transformation, Rank of a matrix by echelon form, normal form.Cauchy–Binet formulae(withoutproof).InverseofNonsingularmatricesbyGaussJordanmethod,Systemoflinearequations:SolvingsystemofHomogeneous and Non-Homogeneous equations by Gauss elimination method,Gauss Seidel Iteration Method, Electrical Circuits(Application).

UNITII:-Eigen values,Eigen vectors and Orthogonal Transformation

Eigenvalues, Eigenvectors and their properties, Diagonalization of a matrix, Cayley-HamiltonTheorem(withoutproof),findinginverseandpowerofamatrixbyCayley-HamiltonTheorem,QuadraticformsandNatureoftheQuadraticForms,ReductionofQuadraticformtocanonicalformsby Orthogonal Transformation.

UNITIII:- Calculus

MeanValue 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(with out proof), Problemson the above theorems.

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

Functionsofseveralvariables:ContinuityandDifferentiability,Partialderivatives,totalderivatives,chainrule,Taylor'sandMaclaurin'sseriesexpansionoffunctionsoftwovariables.Jacobians,Functionaldependence,maximaandminimaoffunctionsoftwo variables,methodofLagrangemultipliers.

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 tripleintegrals)

Textbooks:-

1. **Higher Engineering Mathematics**,B.S.Grewal,KhannaPublishers,2017, 44th Edition
2. **AdvancedEngineeringMathematics**,ErwinKreyszig,JohnWiley&Sons,2018,10thEdition.

ReferenceBooks:-

1. **ThomasCalculus**,GeorgeB.Thomas,MauriceD.WeirandJoelHass,PearsonPublishers,2018, 14thEdition.
2. **AdvancedEngineeringMathematics**,R.K.JainandS.R.K.Iyengar,AlphaScienceInternatio

nalLtd.,2021 5thEdition(9th reprint).
3. **AdvancedModernEngineeringMathematics**,GlynJames,Pearsonpublishers,2018,5thEdit ion.
4. **AdvancedEngineeringMathematics**,MicheaelGreenberg,,Pearsonpublishers,9thedition
5. **HigherEngineeringMathematics**,H.KDas,Er.RajnishVerma,S.ChandPublications,2014, Third Edition (Reprint 2021)

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ENGINEERINGPHYSICS

(Commonforall branches of Engineering)

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

Course Objectives:

To bridgethegapbetweenthePhysicsinschool at 10+2levelandUGlevelengineeringcourses by identifying the importanceoftheopticalphenomenonlikeinterference, diffractionetc., 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 powerand resolving power of Grating (Qualitative).

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

UNIT IICrystallography 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 –Millerindices – separation between successive (hkl) planes.

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

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UNIT IIIDielectric and Magnetic Materials 10hrs

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'sUncertainty 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.

UNIT V Semiconductors: **9hrs**

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– dependenceofFermienergyoncarrier 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 ArunMurthy, 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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BASIC ELECTRICAL & ELECTRONICS ENGINEERING
(Common to all branches of engineering)
Subject Code: 23ES1T02(CE,MEC,EEE,ECE)
Subject Code: 23ES2T02(CSE,Allied Branches)

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.

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. Bhatacharya, Basic Electrical and Electronics Engineering, Second Edition, Person Publications, 2018.

ART 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, PearsonEducation, 2021.
2. R. P. Jain, Modern Digital Electronics, 4thEdition, 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. SantiramKal, 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.

I Year - I Semester	Code: 23ES1T04	L	T	P	C
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INTRODUCTION TO PROGRAMMING

(CommontoAllbranchesofEngineering)

Course Objectives:

- Tointroducestudentstothefundamentalsofcomputerprogramming.
- Toprovidehands-onexperiencewithcodinganddebugging.
- Tofosterlogicalthinkingandproblem-solvingskillsusing programming.
- Tofamiliarizestudentswithprogrammingconceptssuchasdatatypes,controlstructures,functions, and arrays.
- Toencouragecollaborativelearningandteamworkincoding projects.

Course Outcomes:

A studentafter completionofthecoursewillbeableto

CO1:Understand basics of computers, the concept of algorithm and algorithmic thinking.

CO2:Analyzeaproblemand develop analgorithmto solveit.

CO3:Implement various algorithms using the C programming language.

CO4:Understand more advanced featuresof Clanguage.

CO5:Developproblem-solvingskillsandtheabilitytodebugandoptimizethecode

UNIT-I: Introduction toProgrammingand ProblemSolving:Computer System: History of Computers, Introduction to Components of Computer System, compilation andexecution, 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,PseudoCode, Header file, Errors in compilation time, PrimitiveDataTypes,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 (Posttest) Loops, for loop (CounterControlled) 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 dereferencingandaddressoperators, arraymanipulationusing pointers,Dynamic Memory Management functions,pointers to pointers, command line arguments

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: Introductionto String**,** String Handling Functions

UNIT-V: UserDefinedData Types&FileHandling:

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

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

Note: ThesyllabusisdesignedwithCLanguageasthefundamentallanguageofimplementation**.**

Text Books:

1. TheCProgrammingLanguage",BrianW.KernighanandDennisM.Ritchie,Prentice-Hall, Second Edition 2015.
2. Schaum'sOutlineofProgrammingwithC,ByronSGottfried,McGraw-Hill, Second Edition.
3. Problem Solving and Programming in C by RS Salaria, Khanna Book Publishing, Fifth Edition.

Reference Books:

1.ComputingfundamentalsandCProgramming,E Balagurusamy, McGraw-HillEducation.
2. ProgramminginC,RemaTheraja, 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.

COMMUNICATIVE ENGLISH LAB

(Common to all branches)

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COURSE CODE:20HM1L01(CE,EE,MEC,ECE)

20HM1L01(CSE,CSE(AIDS),AIML,CSE(AIML))

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

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. 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/UCNfm92h83W2i2ijc5Xwp_IA

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ENGINEERING PHYSICS LAB

(Common to All Branches of Engineering)

Course Code:23BS1L01(CIV, MEC, ECE & EEE)
23BS2L01(CSE, AIDS, AIML& CSE(AIML))

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 ofradius of curvatureofagiven planoconvexlens byNewton's rings.
2. Determination ofwavelengthsofdifferentspectral lines in mercury spectrum using diffraction grating in normal incidence configuration.
3. Verification ofBrewster's law
4. Determination ofdielectric constant using charging and discharging method.
5. Study thevariation ofB versus Hby magnetizingthe magneticmaterial (B-H curve).
6. Determination ofwavelengthof Laser lightusingdiffraction grating.
7. Estimation of Planck's constant using photoelectric effect.
8. Determination of the resistivity of semiconductors by four probemethods.
9. Determination ofenergy gap of asSemiconductorusing p-n junction diode.
10. MagneticfieldalongtheaxisofacurrentcarryingcircularcoilbyStewartGee's Method.
11. DeterminationofHallvoltageandHallcoefficientofagivensemiconductorusingHallEffect.
12. Determination oftemperature coefficients of athermistor.
13. Determination the acceleration due to gravity by using the compound pendulum.
14. Determination ofmagneticsusptibility byKundt's tube method.
15. Determination ofrigidity modulus of thematerial ofthe given wireusing Torsional pendulum.
16. Sonometer: Verification oflaws ofstretchedstring.
17. Determination ofyoung's modulus forthegiven material ofwooden scale bynon- uniform bending (or

double cantilever)method.

18. Determination ofFrequency ofelectricallymaintained tuning fork by Melde'sexperiment.

Note: Any **TEN** of the listed experiments are to be conducted. Outofwhich any**TWO**experiments may beconducted in virtualmode.

References:A Textbook of Practical Physics - S. Balasubramanian, M.N. Srinivasan, S. Chand Publishers, 2017.

URL:www.*vlab.co.in*

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ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP
(Common to All branches of Engineering)
Subject Code: 23ES1L01(CE,MEC,EEE,ECE)
Subject Code: 23ES2L01(CSE,Allied Branches)

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 arelearned 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 beused by the students.

3. Components:
   - Familiarization/Identification of components (Resistors, Capacitors,Inductors, Diodes, transistors, IC's etc.) – Functionality, type, size, colour codingpackage, symbol, cost etc.

   - Testing of components like Resistor, Capacitor, Diode, Transistor, ICs etc. - Compare values of components like resistors, inductors, capacitors etc with themeasured values by using instruments

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, ACVoltmeters, CROs, all the required active devices.

References:

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

I Year - I Semester	Code: 23ES1L04	L	T	P	C
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COMPUTER PROGRAMMING LAB

(CommontoAllbranches)

Course Objectives:

Thecourseaimstogivestudentshands–onexperienceandtrainthemontheconceptsoftheC-programming language.

Course Outcomes:

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

CO2:Select theright control structureforsolvingthe problem.

CO3:DevelopCprogramswhichutilizememoryefficientlyusingprogrammingconstructslikepointers .

CO4:Develop,DebugandExecuteprogramstodemonstrate theapplicationsofarrays,functions,basic conceptsof pointers in C.

UNIT I

WEEK 1:

Objective: Gettingfamiliarwiththeprogrammingenvironmentonthecomputerandwritingthefirst program.

SuggestedExperiments/Activities:

Tutorial1: Problem-solvingusingComputers.

Lab1: Familiarizationwith programmingenvironment

i) BasicLinuxenvironmentand itseditorslikeVi, Vim&Emacsetc.
ii) Exposureto TurboC, gcc
iii) Writingsimpleprogramsusingprintf(),scanf()

WEEK 2:

Objective: Gettingfamiliarwithhowtoformallydescribeasolutiontoaprobleminaseriesoffinite steps both using textual notation andgraphic notation.

SuggestedExperiments/Activities:

Tutorial2: Problem-solvingusingAlgorithmsandFlowcharts.

Lab2: Convertingalgorithms/flowchartsintoCSourcecode.

Developingthealgorithms/flowchartsforthefollowingsampleprograms

i) Sumand averageof 3numbers
ii) ConversionofFahrenheitto Celsiusandviceversa
iii) Simpleinterestcalculation

WEEK 3:

Objective:Learnhowtodefine variableswiththedesireddata-type,initialize themwithappropriatevaluesandhow arithmeticoperatorscan beusedwithvariablesandconstants.

SuggestedExperiments/Activities:

Tutorial3: Variabletypesandtypeconversions:

Lab3: Simplecomputationalproblemsusingarithmeticexpressions.

i) Findingthesquare rootofagivennumber
ii) Findingcompoundinterest
iii) Areaofatriangleusing heron'sformulae
iv) Distancetravelledbyan object

UNIT II

WEEK 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constantsandoperators used in the expression and how operator precedenceworks.

SuggestedExperiments/Activities:

Tutorial 4: Operatorsandtheprecedenceandasassociatively:

Lab4: Simplecomputationalproblemsusingtheoperator'precedenceandassociativity

i) Evaluatethefollowingexpressions.
   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) Findthemaximumofthreenumbersusingconditionaloperator
iii) Takemarksof5subjectsinintegers, andfindthe total,averagein 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 beusedandhowtousethem.Exploreallrelationalandlogicaloperatorswhilewritingconditionalsfor"if construct".

SuggestedExperiments/Activities:

Tutorial5: Branchingandlogicalexpressions:
Lab5:Problemsinvolvingif-then-elsestructures.

i) WriteaCprogram to findthemaxand min offour numbersusing if-else.
ii) WriteaCprogramtogenerate electricitybill.
iii) Findtherootsofthequadraticequation.
iv) WriteaCprogramtosimulate acalculatorusingswitchcase.
v) WriteaC programtofind thegivenyear isaleapyearornot.

WEEK 6:

Objective: Explorethefullscopeofiterativeconstructsnamelywhileloop,do-whileloopand forloopinadditiontostructuredjumpconstructslikebreakandcontinueincludingwheneachofthesestatements is moreappropriate to use.

SuggestedExperiments/Activities:

Tutorial6: Loops,while andforloops
Lab6: Iterativeproblemse.g.,thesumofseries

i) Findthefactorialof givennumberusingany loop.
ii) Findthegivennumber isaprimeor not.
iii) Computesineandcosseries
iv) Checkinganumberpalindrome
v) Constructapyramidofnumbers.

UNIT III

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-Dand

2-D and more generically n-D arrays and referencing individual array elements from thedefinedarray. Usinginteger 1-Darrays,exploresearchsolution linear search.

SuggestedExperiments/Activities:

Tutorial7:1DArrays: searching.

Lab7:1DArraymanipulation,linearsearch

i) Findtheminand maxofa 1-Dintegerarray.
ii) Performlinearsearchon1Darray.
iii) Thereverseofa1D integerarray
iv) Find2's complementofthegivenbinary number.
v) Eliminateduplicateelementsinanarray.

WEEK 8:

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

SuggestedExperiments/Activities:

Tutorial8:2D arrays,sorting
Lab8: Matrix problems,Stringoperations, Bubblesort

i) Additionoftwomatrices
ii) Multiplicationtwomatrices
iii) Sortarrayelementsusingbubblesort

WEEK 9:

Objective: Explore pointers tomanage a dynamic arrayof integers, includingmemoryallocation&valueinitialization,resizingchangingandreorderingthecontents ofanarray

andmemoryde-allocationusingmalloc(),calloc(),realloc()andfree()functions.Gainexperienceprocessing command-linearguments received by C

SuggestedExperiments/Activities:

Tutorial9: Pointersanddynamicmemoryallocation

Lab9: Pointersandmemorydereference.

i) WriteaCprogram to findthesum ofa1D arrayusing malloc ()
ii) Enternstudents datausingcalloc () anddisplayfailed studentslist
iii) WriteaCprogramtoimplement realloc ()

UNIT IV

WEEK 10:

Objective: ExploretheFunctions,sub-routines,scopeandextentofvariables,doingsomeexperimentsbyparameterpassingusingcallbyvalue .Basicmethodsofnumericalintegration

SuggestedExperiments/Activities:

Tutorial10: Functions,callbyvalue,scopeandextent,
Lab10: Simplefunctionsusingcallbyvalue,solvingdifferentialequationsusingEulerstheorem.

i) Concatenatetwostringswithoutbuilt-infunctions
ii) Reverseastring using built-inand without built-instring functions
iii) WriteaCfunction to find the length of astring.

iv) WriteaC function totranspose ofamatrix.
v) WriteaCfunctiontodemonstratenumericalintegrationofdifferentialequationsusingEuler'smethod

WEEK 11:

Objective: Explorehowrecursivesolutionscanbeprogrammedbywritingrecursivefunctionsthat can be invoked from the main by programming at-least five distinct problems that havenaturallyrecursivesolutions.

SuggestedExperiments/Activities:

Tutorial11: Recursion,recursive calls

Lab11: Recursivefunctions

i) WritearecursivefunctiontogenerateFibonacciseries.
ii) Writearecursivefunction to find thelcm oftwo numbers.
iii) Writearecursivefunction to find thefactorial of a number.
iv) WriteaC Programto implement Ackermannfunction using recursion.
v) Writearecursivefunction tofind thesum of series.

WEEK 12:

Objective: Explore the basic difference between normal and pointer variables, Arithmeticoperationsusing pointersand passing variablestofunctionsusing pointers

SuggestedExperiments/Activities:

Tutorial12: Callbyreference,danglingpointers

Lab12: SimplefunctionsusingCallbyreference, Danglingpointers.

i) WriteaC programto swaptwonumbers usingcall byreference.
ii) DemonstrateDanglingpointerproblemusingaCprogram.
iii) WriteaC programto copy onestring into anotherusingpointer.
iv) WriteaCprogramtofindnooflowercase,uppercase,digitsandothercharactersusing pointers.

UNIT V

WEEK 13:

Objective: ExperimentwithCStructures,Unions,bitfieldsandself-referentialstructures(Singlylinked lists) andnested structures

SuggestedExperiments/Activities:

Tutorial13: Structure,Bitfields,Self-ReferentialStructures,Linkedlists

Lab13: Structure, Self-ReferentialStructures, Bitfields,linkedlists

Readandprintadateusingdd/mm/yyyyformatusingbit-fieldsanddifferentiatethesamewithout usingbit-fields

i) WriteaCprogramto findthetotal,averageofnstudentsusing structures
ii) Readstudentnameandmarksfromthecommandlineanddisplay thestudentdetails alongwith thetotal.
iii) Createanddisplayasinglylinkedlistusingself-referentialstructure.
iv) Demonstratethedifferencesbetweenstructuresandunionsusing aCprogram.
v) WriteaCprogram toshift/rotate usingbitfields.
vi) WriteaCprogram to copyonestructurevariable to anotherstructureof thesame type.

WEEK14:

Objective: Tounderstanddatafilesandfilehandlingwithvariousfile I/Ofunctions.Explorethedifferencesbetween textand binaryfiles.

SuggestedExperiments/Activities:

Tutorial14: Filehandling

Lab14: Fileoperations

i) WriteaC programto write andread text intoafile.
ii) WriteaCprogramtowriteandreadtextintoabinaryfileusingfread()andfwrite()
iii) Copythecontents ofonefiletoanotherfile.
iv) WriteaCprogramtomergetwofilesintothethirdfileusingcommand-linearguments.
v) Findno.oflines,words andcharactersina file
vi) WriteaCprogram toprintlast ncharactersofagivenfile.

Text Books:

1. ProgramminginC - Apracticalapproach by AjayMittal,Pearson Education, First Edition.
2. Schaum's OutlineofProgrammingwith C by ByronS. Gottfried,McGrawHill, Second Edition.

Reference Books:

1. BrianW.KernighanandDennisM.Ritchie,TheCProgrammingLanguage,Prentice-HallofIndia
2. CProgramming,AProblem-SolvingApproach,Forouzan,Gilberg,Prasad,CENGAGE

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HEALTH AND WELLNESS, YOGA AND SPORTS

(Common to All branches of Engineering)

23BS1L04(CE,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

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 andrunning.

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 manyas 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 voceonthesubject.