Vision of the Institution

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institution

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of ECE Department

In pursuit of world class excellence in the field of Electronics& Communication Engineering by imparting quality education and promoting Research.

Mission of ECE Department

- To empower students with knowledge and competencies in the field of Electronics & Communication Engineering conforming to International standards.
- To produce creative solutions essential to local and global needs in the field of Electronics & Communication Engineering.
- To mould the students professionally with a consciousness of moral values and professional ethical code.

Program Educational Objectives (PEOs) of ECE Department

PEO1: To provide world class Education in the principles of engineering that incorporate open ended design experience and the use of software and hardware tools related to Electronics and Communication Engineering and hence improve the employability skills of the student.

PEO2: To make the students able to function with multi-disciplinary teams that will enhance the leadership qualities and to formulate and solve engineering problems as a team which helps the student to adopt better professional conduct.

PEO3: To provide learning environment that provides open interaction for the students with faculty and staff that makes them innovative and dynamic and encourages research and motivate them to solve the problems of the society.

Program Outcomes (POs) of ECE Department

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) of ECE Department

1. Will be equipped with knowledge of innovative, dynamic complete design flow specialized in implementation of projects pertaining to communication system, signal processing, digital and analog IC design, embedded systems and will integrate all areas to illustrate the goal of digital India.

2. Will have the ability to analyze, design electronics and communication applications using software tools like, pSpice, XYLINX, MATLAB, Mentor Graphics and other related software's.

3. Can demonstrate the principles of semiconductor devices, digital system, Microprocessor and microcontrollers, signal processing, antenna design in fields of consumer electronics, medical, defence and spacecraft electronics industry.

4. Will have strong ethical moral values and sound fundamental foundation of technical knowledge in all core subjects which help them to explore scientific theories, ideas, methods and technologies that help in solving current and future universal societal problems through Assistive Technology Laboratory as a flat form.

Department of Basic Science
(R-20 Regulations)
Syllabus: I B.Tech-I Semester
(Common to all Branches except CS&BS)

Course Title: Mathematics-I (Linear Algebra & Calculus)

L T P C
3 0 0 3

Course Objectives:

To enable the students to

1. know the importance of matrices to solve linear equations using matrices
2. identify and solve various differential equations using corresponding methods
3. apply methods of solving higher order linear differential equations
4. comprehend the theory of maxima and minima of a function of two variables.
5. analyze thetechniques of tracing the curves and evaluate the lengths, areas, volumes of objects using multiple integrals

UNIT –I: Matrices - Linear system of equations

Introduction, Different types of matrices, Rank-Echelon form - Normal form, Solution of a System of Linear Equations – Non-homogeneous and homogeneous equations, Gauss- Jordan method, Gauss – Elimination Method, LU Decomposition,Applications of electric circuits.

UNIT- II: Eigen values - Eigen vectors

Eigen values - Eigen vectors – Properties– Cayley-Hamilton Theorem - finding inverse and power of a matrix by usingCayley-Hamilton theorem, Diagonalization of matrices, Spectral Decomposition,Singular Value Decomposition and Principal Component Analysis.

UNIT –III: Differential Equations

Differential equations of first order and first degree–Exact and Non– exactdifferential equations, Linear and Bernoulli differential equations.Orthogonal trajectories,Newton's Law of cooling, Law of natural growth and decay

Higher order homogenous and non - homogenous linear differential equations with constant coefficients - Particular integrals for the functions of type e^{ax}, $\sin(ax+b)$,$\cos(ax+b)$, Polynomial of x , $e^{ax} V(x)$, L-C-R Circuits.

UNIT – IV: Partial Differentiation

Functions of several variables- Partial derivatives, Total derivative, Chain rule, Change of variables, Jacobians, Functional dependence.Generalized Mean Value theorem –Taylor's theorem and Maclaurin's theorem (without proof) for a function of two variables, Maxima and Minima of functions of two variables, Lagrange's method of undetermined multipliers

UNIT –V: Multiple Integrals and Applications

Review of Curve tracing-Cartesian-Polar and Parametric curves.

Multiple integrals - double integrals - change of variables (Cartesian and Polar coordinates), Change of order of integrationand Evaluation of triple integrals, computing area and volume.

Text Books:

1. B. S. Grewal, Higher Engineering Mathematics, 42nd Ed., Khanna Publishers, New Delhi, 2012
2. Erwin .Kreyszig,Advanced Engineering Mathematics,9th Ed., Wiley, 2012

References:

1. T.K.V.Iyengar, B. Krishna Ghandhi, S. Ranganathan and M.V.S.S.N.Prasad, Engineering Mathematics, Volume-I, 12th Ed., S. Chand Publishers, 2014
2. B. V. Ramana, Engineering Mathematics, 4th Ed., Tata McGraw Hill, New Delhi, 2009
3. D. S. Chandrashekharaiah, Engineering Mathematics, Volume 1, Prism Publishers, 2010
4. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, reprint, 2008.

Course Outcomes:

After completing this course, the students will be able to

1. solvelinear system of equations in engineering problems
2. find Eigen-values and Eigenvectors of a matrix in engineering studies.
3. model engineering problems as differential equations and solve analytically.   .
4. find out local /global optimum of functions of several variables.
5. compute areasand volumes by integrals

VISHNU INSTITUTE OF TECHNOLOGY:: BHIMAVARAM

(Autonomous)
Approved by AICTE, Accredited by NAAC- A++, NBA & Affiliated to JNTUK, Kakinada
Department of Basic Science
Syllabus: I B. Tech-I/II Semester
(R-20 Regulations)
(Common to all circuital branches like ECE, EEE, CSE, IT, AI&DS and AI&ML etc.)

Course Title: Applied Physics

L	T	P	C
3	0	0	3

Course Objectives:

- ➢ To identify the importance of the optical phenomenon i.e. interference, diffraction and polarization related to its Engineering applications
- ➢ To Understand the mechanism of emission of light, utilization of lasers as coherent light sources for low and high energy applications. Study of propagation of light through optical fibers and their implications in optical communications
- ➢ To explain the significant concepts of dielectric and magnetic materials that leads to potential applications in the emerging micro devices.
- ➢ Enlightenment of the concepts of Quantum Mechanics and to provide fundamentals of deBroglie matter waves, quantum mechanical wave equation and its application and to know the importance of free electron theory for metals.
- ➢ Enlightenment of the importance of band theory for crystalline solids and metals. To understand the physics of Semiconductors and their working mechanism.

UNIT –I: Wave Optics

Interference:

Introduction - Principle of Superposition-Coherence-Conditions for Sustained Interference -Interference in thin films (reflected Geometry)-Newton's Rings-Determination of Wavelength and Refractive Index-Applications of Interference.

Diffraction:

Introduction- Fresnel and Fraunhofer diffraction-Fraunhofer Diffraction due to Single slit, Double slit –N – slits (Qualitative)-Diffraction Grating -Determination of Wavelength-Applications of Diffraction.

Polarization:

Introduction- types of polarized light, Polarization by reflection, refraction and double refraction- Nicol's prism-Half wave and Quarter wave plates

UNIT- II: Lasers and Fiber Optics

Lasers:

Introduction-Characteristics of Laser–Spontaneous and Stimulated emissions of radiation-Einstein's coefficients & Relation between them and their significance – population inversion - Ruby laser – Helium Neon laser –Semiconductor diode laser(Qualitative)- Applications of Lasers.

Fiber Optics:

Introduction to Optical Fibers-Total Internal Reflection- Construction of optical fibers -Acceptance angle-Numerical Aperture-Classification of fibers based on Refractive index profile, modes -Block Diagram of Fiber optic Communication- Applications of optical fibers.

UNIT –III: Magnetic Materials & Dielectric Properties

Magnetic Materials:
Introduction -Magnetic dipole moment-Magnetization-Magnetic susceptibility and permeability- Origin of permanent magnetic moment -Classification of Magnetic materials-Weiss theory of ferromagnetism (qualitative)-Hysteresis-soft and hard magnetic materials-Magnetic device applications.

Dielectrics :
Introduction to Dielectrics - Electric polarization - Dielectric polarizability, Susceptibility and Dielectric constant- Types of polarizations - Electronic and Ionic polarizations with mathematical derivations – Orientational polarization (Qualitative)–Internal field in solids -Claussius -Mosotti equation.

UNIT – IV: Quantum Mechanics and Free Electron Theory of Metals

Quantum Mechanics:
Introduction- Dual nature of matter-Matter waves, de-Broglie wavelength, Properties of wave function- time independent and time dependent Schrödinger's wave equation-Particle in a one dimensional infinite potential well.

Free Electron Theory of Meals:
Classical free electron theory (Qualitative with discussion of merits and demerits)-Quantum free electron theory-Equation for electrical conductivity based on quantum free electron theory-Fermi-Dirac Distribution-density of states (3D) - Fermi Energy.

UNIT –V: Band Theory of Solids and Semiconductors

Band Theory of Solids:
Bloch Theorem - Kronig-Penny Model (Qualitative)-E vs K and v vs K diagram- Origin of energy bands - Classification of solids based on energy bands – Effective Mass of an Electron-Concept of a Hole

Semiconductors:
Introduction– Intrinsic semiconductors - density of charge carriers-Fermi level – extrinsic semiconductors - P-type & N-type - Density of charge carriers - Dependence of Fermi energy on carrier concentration and temperature - Drift and Diffusion currents – Einstein's equation - Hall effect- Hall coefficient - Applications of Hall effect.

Text Books:

1.M.N. Avadhanulu, P.G.Kshirsagar "A Text book of Engineering Physics"-S.Chand Publications,2017
2. H.K.Malik & A.K.Singh "Engineering Physics",- McGraw Hill Publishing Company Ltd, 2018
3. P.K. Palanisamy, Applied Physics, SciTech Publications.

References:

1. Gerd Keiser "Optical Fiber Communications"- 4/e, Tata Mc GrawHill.

2. Charles Kittel "Introduction to Solid State Physics",Wiley Publications.

3. S.M.Sze "Semiconductor devices-Physics and Technology"-Wiley.

4. Halliday, Resnick and Walker, "Fundamentals of Physics", John WileySons.

5. M.R. Srinivasan, Engineering Physics, NewAge International Publishers.

6. Ajoy Ghatak "Optics" Tata Mc GrawHill.

Course Outcomes:

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

CO1: Explain the need of coherent sources and the conditions for sustained interference. Identify the applications of interference in engineering. Analyze the differences between interference and diffraction with applications. Illustrate the concept of polarization of light and its applications.

CO2 Explain various types of emission of radiation. Identify the role of laser in engineering applications. Describe the construction and working principles of various types of lasers. Explain the working principle of optical fibers. Classify optical fibers based on refractive index profile and mode of propagation. Identify the applications of optical.

CO3: Explain the concept of dielectric constant and polarization in dielectric materials. Summarize various types of polarization of dielectrics. Classify the magnetic materials based on susceptibility and their temperature dependence. Explain the applications of dielectric and magnetic materials. Apply the concept of magnetism to magnetic devices.

CO4: Describe the dual nature of matter. Explain the significance of wave function. Identify the role of Schrodinger's time independent wave equation in studying particle in one-dimensional infinite potential well. Identify the role of classical free electron theory in the study of electrical conductivity.

CO5**:** Explain the concept of quantum free electron theory in the study of electrical conductivity. Classify the energy bands of solids. Outline the properties of charge carriers in semiconductors. Identify the type of semiconductor using Hall effect. Identify applications of semiconductors in electronic devices.

DEPARTMENT OF BASIC SCIENCE

Year/Semester	I.B.Tech-I Sem	L	T	P	C
Regulation Year	R-20 2020-21	3	0	0	3
Name of the Subject	Communicative English				
Branch	All Branches (except CSBS)				

SYLLABUS

Introduction

The course is designed to train students in receptive (listening and reading) as well as productive and interactive (speaking and writing) skills by incorporating a comprehensive, coherent and integrated approach that improves the learners' ability to effectively use English language in academic/ workplace contexts. The shift is from learning about the language to using the language. On successful completion of the compulsory English language course/s in B.Tech., learners would be confident of appearing for international language qualification/proficiency tests such as IELTS, TOEFL, or BEC, besides being able to express themselves clearly in speech and competently handle the writing tasks and verbal ability component of campus placement tests. Activity based teaching-learning methods would be adopted to ensure that learners would engage in actual use of language both in the classroom and laboratory sessions.

Course Objectives

Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers

Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials

Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations

Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information

Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing.

Methodology:

1. The classes are to be learner-centered 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.

(R-20 Regulations)
Detailed Textbook:
Infotech English by Maruthi Publications

Non-Detailed Textbook:
Wings of Fire: APJ Abdul Kalam by University Press

Unit 1 (10 periods)

Detailed: A Drawer Full of Happiness
Non-detailed: APJ Abdul Kalam's Wings of Fire 1-5 Chapters

Reading: Skimming text to get the main idea. Scanning to look for specific pieces of information.

Reading for Writing: Beginnings and endings of paragraphs - introducing the topic, summarizing the main idea and/or providing a transition to the next paragraph.

Writing: Writing **S**entences with proper word order - Basic Sentence Structures

Vocabulary: Technical vocabulary from across technical branches (20) GRE Vocabulary (20) Antonyms and Synonyms, Word applications, Verbal reasoning and sequencing of words.

Grammar: Content words and function words; word forms: verbs, nouns, adjectives and adverbs; nouns: countables and uncountables; singular and plural, pronouns, basic sentence structures; simple question form - wh-questions; word order in sentences.

Unit 2 (10 periods)
Detailed: Nehru's letter to his daughter Indira on her birthday
Non-detailed: APJ Abdul Kalam's Wings of Fire 6-10 Chapters

Reading: Identifying sequence of ideas; recognizing verbal techniques that help to link the ideas in a paragraph together.

Writing: Paragraph writing (specific topics) using suitable cohesive devices; linkers, sign posts and transition signals; mechanics of writing - punctuation, capital letters. .

Vocabulary: Technical vocabulary from across technical branches (20 words). GRE Vocabulary Analogies (20 words) Antonyms and Synonyms, Word applications

Grammar: Use of articles and zero article; prepositions

Unit 3 (10 periods)

Detailed: Stephen Hawking-Positivity 'Benchmark'

Non-detailed: APJ Abdul Kalam's Wings of Fire 10-15 Chapters

Reading: Reading a text in detail by making basic inferences - recognizing and interpreting specific context clues; strategies to use text clues for comprehension. Critical reading.

Reading for Writing: Summarizing - identifying main idea/s and rephrasing what is read; avoiding redundancies and repetitions.

Vocabulary: Technical vocabulary from across technical branches (20 words). GRE Vocabulary (20 words) Antonyms and Synonyms, Word applications, Association

Grammar: Verbs - tenses; Subject-verb agreement

Unit 4 (10 periods)

Detailed: Liking a Tree, Unbowed: Wangari Maathai's Biography

Non-detailed: APJ Abdul Kalam's Wings of Fire 16-20 Chapters

Reading: Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships, communicative process or display complicated data.

Reading for Writing: Information transfer; describe, compare, contrast, identify significance/trends based on information provided in figures/charts/graphs/tables.

Vocabulary: Technical vocabulary from across technical branches (20 words) GRE Vocabulary (20 words) Antonyms and Synonyms, Word applications

Grammar: Quantifying expressions - adjectives and adverbs; comparing and contrasting; degrees of comparison,

Unit 5 (10 periods)

Detailed: Stay Hungry-Stay foolish from "Infotech English", Maruthi Publications

Non-detailed: APJ Abdul Kalam's Wings of Fire 21-24 Chapters by University Press

Reading: Reading for comprehension. RAP Strategy Intensive reading and Extensive reading techniques

Reading for Writing: Letter writing, E mail writing, email etiquette

Vocabulary: Technical vocabulary from across technical branches (20 words) GRE Vocabulary (20 words) Antonyms and Synonyms, Word applications

Grammar: Direct and indirect speech, reporting verbs for academic purposes, Active Voice- Passive Voice; editing short texts – identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject verb agreement and conjunctions)

Course Outcomes

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

➢ Appreciate a piece of prose; employ suitable strategies for skimming and scanning to get the general idea of a text; recognize paragraph structure and formulate sentences using proper grammatical structures and correct word forms of nouns and pronouns and GRE Words
➢ Study a piece of prose; write well structured paragraphs and understand applying cohesive devices and use articles and prepositions accurately and learn good vocabulary
➢ Analyze a text in detail and summarize and employ verbs, tenses and subject verb agreement appropriately; apply vocabulary and word associations
➢ Understand a text, and learn and apply information transfer and apply the use of adjectives and adverbs and vocabulary
➢ Interpret ideas from reading comprehension and write formal letters and emails, use voice and reported speech properly and edit short texts by correcting common errors and learn vocabulary

Reference Books

● Bailey, Stephen. *Academic writing: A handbook for international students*. Routledge, 2014.
● Chase, Becky Tarver. *Pathways: Listening, Speaking and Critical Thinking.* Heinley ELT; 2nd Edition, 2018.
● Skillful Level 2 Reading & Writing Student's Book Pack (B1) Macmillan Educational.
● Hewings, Martin. *Cambridge Academic English (B2)*. CUP, 2012.

Sample Web Resources

Grammar/Listening/Writing

1-language.com

http://www.5minuteenglish.com/

https://www.englishpractice.com/

Grammar/Vocabulary

English Language Learning Online

http://www.bbc.co.uk/learningenglish/

http://www.better-english.com/

http://www.nonstopenglish.com/

https://www.vocabulary.com/

BBC Vocabulary Games

Free Rice Vocabulary Game

Reading

https://www.usingenglish.com/comprehension/

https://www.englishclub.com/reading/short-stories.htm

https://www.english-online.at/

 Listening

https://learningenglish.voanews.com/z/3613

http://www.englishmedialab.com/listening.html

 Speaking

https://www.talkenglish.com/

BBC Learning English – Pronunciation tips

Merriam-Webster – Perfect pronunciation Exercises

All Skills

https://www.englishclub.com/

http://www.world-english.org/

http://learnenglish.britishcouncil.org/

 Online Dictionaries

Cambridge dictionary online

MacMillan dictionary

Oxford learner's dictionaries

I B.Tech I Semester

ENGINEERING GRAPHICS

ECE & EEE

L	T	P	C
3	0	0	3

COURSE OBJECTIVES:

- To introduce the students to use drawing instruments and to draw polygons, engineering curves and use scales
- To introduce the students orthographic projections, projections of points & lines.
- The objective is to make the students draw the projections of the plane inclined to both the planes.
- The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.
- The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa.

UNIT I

Introduction to Graphics
Curves: Ellipse, Parabola and Hyperbola by general methods, Tangent & Normal
Scales: Plain scale, Diagonal scale and Vernier scale.

UNIT II

Orthographic Projections: Introduction to Projections, Horizontal plane, Vertical plane, Profile plane, importance of reference lines.
Projections of points in various quadrants.
Projections of straight lines inclined to one plane, inclined to both the planes, traces.

UNIT III

Projections of planes: Inclined to one reference plane; inclined to both the reference planes.

UNIT IV

Projections of Solids – Projections of Prisms, Pyramids, Cones and Cylinders simple positions, the axis inclined to one of the reference planes.

UNIT V

Conversion of isometric views to orthographic views;
Conversion of orthographic views to isometric views.

COURSE OUTCOMES:

Students will be able to:
1. Construct Engineering Curves and scales
2. Understand orthographic projections, projections of points & lines.
3. Draw the projections of a plane inclined to both the planes.
4. Draw the projections of various types of solids in different positions inclined to one of the planes.
5. Visualize and convert the isometric view to orthographic view and vice versa.

TEXT BOOKS:

1. Engineering Drawing by N.D. Bhatt, Charotar Publishing House Pvt. Ltd
2. Engineering Drawing by Agarwal & Agarwal, Tata McGraw Hill

REFERENCE BOOKS:

1. Engineering Drawing by K.L.Narayana& P. Kannaiah, Scitech Publications
2. Engineering Graphics for Degree by K.C. John, PHI Learning
3. Engineering Graphics by PI Varghese, McGrawHill Publishers.
4. Engineering Drawing + AutoCAD by K. Venugopal, V. Prabhu Raja, New Age

VISHNU
UNIVERSAL LEARNING

VISHNU INSTITUTE OF TECHNOLOGY :: BHIMAVARAM

(AUTONOMOUS)

Approved by AICTE, Accredited by NAAC-A[++], NBA & Affiliated to JNTUK, Kakinada

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	3
Subject	Computational Thinking and Programming				
Branch	CSE,IT,ECE, AI&DS,EEE,CE,ME				

Course Objectives:

1. To teach problem solving through Algorithms and Flowcharts
2. To elucidate problem solving through Python programming language
3. To train in the development of solutions using modular concepts
4. To explain the role of data structures in programming
5. To introduce object oriented programming paradigm through Python

UNIT – I: Knowing the Computer

Definition and Block Diagram of a Computer. Basic parts of a computer (Memory, CPU, Input, and Output), Memory hierarchy, Circuits and Logic, Hardware vs Software, Representation of Data in memory (integer (including negative), floating points etc. to text, images, audio and video), Principle of Abstraction, Operating System, Language Hierarchy - Machine Language to High Level Language, Compiler, Interpreter, The Command Line Interface (basic Linux commands)

UNIT – II: Computational Thinking and Introduction to Python

Simple logic building through flowcharting. Flowchart symbols, conditional and repetition blocks. Computational Thinking, Algorithm, Pseudocode, Time/Space complexity. Only Big O notation.

Basic structure of a Python program, Elements of Python programming Language: token, literals, identifiers, keywords, expression, type conversions, Numbers, Variables, Input/Output statements, basic data types. Operators and their types and precedence, expressions. Control structures in Python - conditionals and loops

UNIT – III: Python Data Structures and Modularization

List and List Operations, Using Lists to represent Matrices, Strings, String operations, Tuples, Dictionaries, Sets, Iterators and generators, comprehensions.

Basic math functions, User defined Functions, parameters to functions, positional, keyword and default arguments, Lambda Functions, recursion. Packages, modules and namespaces.

UNIT-IV: File Handling

Files, Types of Files, Creating and Reading Text Data, File Methods to Read and Write Data, Reading and Writing Binary Files, The Pickle Module, Reading and Writing CSV Files, Python os and os.path Modules

UNIT – V: Object Oriented Programming

Object Oriented Design, Classes and Objects, Polymorphism, Abstraction, Inheritance, Encapsulation, Constructors, Function and operator overloading, Exception Handling.

Course Outcomes: Student should be able to
1. Understand the working principles of various components of a computer

2. Develop computational thinking and be able to use Python constructs to solve basic problems

3. Understand modularization and data structures concepts in Python

4. Apply file handling concepts in problem solving

5. Solve Real world problems by applying Object Oriented Concepts

Text Book:

1. Think Python: How to Think Like a Computer Scientist , Allen B. Downey, 2nd Edition
   (https://www.greenteapress.com/thinkpython/thinkCSpy.pdf)

Reference Books:

1. Core python programming, W Chun PHI
   (http://emixam.sevla.free.fr/books/2.PythoProg_softarchive.net.pdf)
2. Python programming a modern approach, Vamsi Kurama, pearson

Web Resources:

1. http://www.ict.ru.ac.za/Resources/cspw/thinkcspy3/thinkcspy3.pdf
2. https://snakify.org

Year/Semester	I B. Tech-I Sem	L	T	P	C
Regulation Year	R-20 2020-21	0	0	3	1.5
Name of the Subject	English Communication Skills Lab				
Branch	All Branches (except CSBS)				

English Language Communication Skills Lab

Course Objectives

1. To sensitize the students nuances of English speech sounds.

2. To bring about a consistent accent and intelligibility in students' pronunciation of English by

   providing an opportunity for practice in speaking.

3. To improve the fluency in spoken English in different contexts.

4. To demonstrate the synchronization of verbal and non verbal communication.

5. To speak with clarity and confidence.

6. To enrich the persuasive skills.

MODULE – I

Listening: Listening to short audio texts and identifying the topic, context and specific pieces of information to answer a series of questions both in speaking and writing.

Speaking: Asking and answering general questions on familiar topics such as home, family, work, studies and interests. Self introduction and introducing others.

Non Verbal Communication

Pronunciation: Introduction to Phonetics-Sounds of English-Phoneme

MODULE – II

Listening: Answering a series of questions about main idea and supporting ideas after listening to audio texts, both in speaking and writing.

Functional English: Greetings and leave taking, Complaining and Apologizing.

Pronunciation: Vowels and Consonants**,** Past tense markers, Plural markers

MODULE – III

Listening: Listening for global comprehension and summarizing what is listened to, both in speaking and writing.

Functional English: Permissions, Requesting, Inviting.

Pronunciation: Syllable, Word Stress: Weak and Strong forms, Stress in compound words, Contrastive Stress

MODULE– IV

Speaking: Just a Minute **(**JAM)

Functional English Asking for and giving Information/Directions; Suggesting/Opinion giving.

Pronunciation: Rhythm & Intonation

MODULE– V

Functional English: Dialogues/Role Plays

Speaking: Formal oral presentations on topics from Science and Technology - with the use of PPT slides.

Pronunciation: Accent Neutralization

INFRASTRUCTURE:

1. 60 computer systems for a class of 60 students.
2. LAN facility and English Language Software for self-study by learners.
3. Audio System
4. Projector

SYSTEM REQUIREMENT: Hardware Component

5. P – IV Processor
6. Speed – 2.8 GHZ
7. RAM – 512 MB minimum
8. Hard Disk – 80 GB
9. Headphones of high quality

SUGGESTED SOFTWARE

1. Cambridge Advanced Learners' English Dictionary with CD.
2. Grammar Made Easy by Darling Kindersley
3. Punctuation Made Easy by Darling Kindersley
4. Clarity Pronunciation Power – Part I
5. Clarity Pronunciation Power – part II
6. Oxford Advanced Learner's Compass, 7th Edition
7. DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.
8. MELL - K Van Solutions Software
9. TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
10. English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge
11. English Pronunciation in Use, Cambridge University Press

12. Technical Communication, OUP
13. Communication Skills, OUP

COURSE OUTCOMES

The students will be able to:

- CO1: Understand Non Verbal Communication and Identify the topic, the context, specific questions and overall idea by listening to short audio texts and answering a series of questions and will also be able to introducing themselves and others
- CO2: Articulate Vowels and Consonants properly and answer a series of questions about main idea and supporting ideas after listening to audio texts and will be able to use expressions for Greetings and Leave takings, Complaining and Apologizing.

- CO3: Understand stress and listen for global comprehension and summarize what is listened to and will be able to use expressions for Permissions, Requesting, Inviting.

- CO4: Apply the rules of stress and intonation while reading a text; will be able to speak on short topics and will also be able to use expressions for Asking for and giving Information/Directions; Suggesting/Opinion giving.
- CO5: Write and enact Dialogues/Role Plays and practice topics from Science and Technology - using PPT slides and neutralize accent

SUGGESTED READING

1) Infotech English, Maruthi Publications (with Compact Disc).

2) Exercises in Spoken English Part 1,2,3,4, OUP and CIEFL.

3) English Pronunciation in use- Mark Hancock, Cambridge University Press.

4) English Phonetics and Phonology-Peter Roach, Cambridge University Press.

5) English Pronunciation in use- Mark Hewings, Cambridge University Press.

6) English Pronunciation Dictionary- Daniel Jones, Cambridge University Press.

7) English Phonetics for Indian Students- P. Bala Subramanian, Mac Millan Publications.

VISHNU INSTITUTE OF TECHNOLOGY:: BHIMAVARAM

(Autonomous)

Approved by AICTE, Accredited by NAAC- A++ , NBA & Affiliated to JNTUK, Kakinada

Department of Basic Science
Syllabus: I B. Tech-I/II Semester

(R-20 Regulations)

(Common to all circuital branches like ECE, EEE, CSE, IT, AI&DS and AI&ML etc.)

Course Title: Applied Physics Lab

L T P C

0 0 3 1.5

List of Experiments

Conduct 10 out of 15 experiments

1. Determination of wavelength of a source-Diffraction Grating-Normal incidence

2. Newton's rings –Radius of Curvature of Plano Convex Lens.

3. Determination of thickness of a thin object using parallel interference fringes.

4. Determination/ of Rigidity modulus of a material- Torsional Pendulum.

5. Determination of Acceleration due to Gravity and Radius of Gyration- Compound Pendulum.

6. Melde's experiment – Transverse and Longitudinal modes.

7. Verification of laws of stretched string – Sonometer.

8. Determination of velocity of sound – Volume Resonator

9. L C R Series Resonance Circuit

10. Study of I/V Characteristics of Semiconductor diode

11. I/V characteristics of Zener diode

12. Thermistor characteristics – Temperature Coefficient

13. Magnetic field along the axis of a current carrying coil – Stewart and Gee's apparatus.

14. Energy Band gap of a Semiconductor p.n junction.

15. Hall Effect for semiconductor.

REFERENCES:

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

2. Physics Practical Manual, Lorven Publication

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2020-21	0	0	3	1.5
Subject	Computational Thinking and Programming Lab				

Laboratory Experiments

Objectives:
- Get acquainted with fundamentals of writing **Python** scripts.
- Master core **Python** scripting elements by solving more number of problems
- Able to identify right data structure to solve the problem
- Design **Python** functions to facilitate code reuse.
- Gaining familiarity with Python file I/O
- Getting Familiarity with Object Oriented Concepts

Week 1-3
➢ Design algorithms and flowcharts for given problems
➢ Python programs on decision and loop control statements
- Whether the given number is even or odd
- Maximum of three numbers
- Sum of digits, Palindrome
- Factorial of a number,
- GCD of given numbers
- Sum of first n natural numbers
- Evaluate Cosine and Sine Series etc.

Week 4-6
➢ Exercise programs on lists and functions
- Finding the sum and average of given numbers using lists.
- To display elements of list in reverse order.
- Finding the minimum and maximum elements in the lists.
- Using functions to calculate power, factorial etc
- Passing lists as function arguments
- Pass by object
- Recursion

Week 7-9
➢ Exercise programs on Strings.
- Count the number of characters, number of vowels etc in the given line of text etc
- Palindrome Check
- Reverse words in a line of text
- Finding the occurrences of substring in the main string
➢ Exercise programs on Tuples, Dictionaries

Week 10-12

- ➢ Exercise programs on file handling covering creating file, writing content into the file and updating the file content etc.
- ➢ Python programs on Object Oriented Programming concepts:
  - Creating a Class with variables and methods
  - Class inheritance
  - Constructors
  - Exception handling