

## **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 CIVIL ENGINEERING Department**

To give the nation qualitative Civil Engineers, who can contribute for the construction of a better world with sophisticated infrastructural facilities, eco-friendly houses, modern transportation facilities with a pollution free environment and to protect the precious natural resources of this planet.

## **Mission of CIVIL ENGINEERING Department**

1. To shape the students into good entrepreneurs and to promote self-confidence and all-round development of the student personality through special lectures, practical training programs, field visits and technical seminars.
2. To train the students to acquire generic knowledge in the areas of Civil Engineering
3. To continuously update the physical infrastructure through modernization, thrust area development, R & D and other schemes
4. To generate knowledge base through sustained research and developmental efforts.
5. To produce engineers with self-confidence and overall personality who can be self-employed and generate employment opportunities to fellow engineers and take active part in nation building,
6. Keeping in view the challenges of the future.

## **Program Educational Objectives (PEOs)**

### **PEO:1**

The main objective of the faculty is to guide them by the principles of sustainable development and global inter connectedness with the civil structures, and make them to understand the impact of civil engineering projects how they effects the society and environment in case of failures.

### **PEO:2**

To develop their communication skills(Oral, Written, Visual, Graphic modes) which makes them to participate actively in their communities and profession when working as team leaders or members.

### **PEO:3**

An intensive training is provided to identify, formulate and solving engineering problems in technical areas appropriate CIVIL ENGINEERING.

### **PEO:4**

To make them competent and engaged engineering professionals applying their technical and managerial skills in planning, designing and construction.

## **Program Outcomes (POs) of CIVIL ENGINEERING 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 CIVIL ENGINEERING Department**

**PSO 1:**

An ability to learn constructional concepts and to implement them in the field work and to make the structural planning in a smarter way.

**PSO 2:**

To encourage young energetic engineers in technical and software skills in the field of Civil Engineering with innovative thoughts along with existing and future trends in constructional field.

**PSO 3 :**

The capability to integrate knowledge in constructional field work and to improve skills to become an entrepreneur.



# VISHNU INSTITUTE OF TECHNOLOGY:: BHIMAVARAM

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## 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 the techniques 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 using Cayley-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– exact differential 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 integration and 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 Gandhi, S. Ranganathan and M.V.S.S.N.Prasad, Engineering Mathematics, Volume-I, 12<sup>th</sup> Ed., S. Chand Publishers, 2014
2. B. V. Ramana, Engineering Mathematics, 4<sup>th</sup> Ed., Tata McGraw Hill, New Delhi, 2009
3. D. S. Chandrashekharaiyah, 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. solve linear 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 areas and volumes by integrals

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## Department of Basic Science Syllabus: I B.Tech-I Semester (R-20 Regulations) (Common to ME & CE)

**Course Title: Engineering 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.
- Familiarize the concepts of theoretical acoustics for their practical utility in engineering acoustics. Explanation for the significance of ultrasound and its application in NDT application.
- Enlighten the periodic arrangement of atoms in Crystalline solids by Bragg's law – Learning the structural analysis through X-ray diffraction.

### 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 with derivations for polarisabilities (Qualitative)–Lorentz (internal) field - Clausius -Mosotti equation.

orthogonal trajectories, Newton’s Law of cooling, Law of natural growth and decay

## **UNIT-IV Acoustics and Ultrasonics**

### **Acoustics:**

Introduction – Reverberation - Reverberation time -Classification of Sound waves- Weber–Fechner law - Sabine’s formula- derivation using growth and decay method – Absorption coefficient and its determination

–factors affecting acoustics of buildings and their remedies.

### **Ultrasonics:**

Introduction -Production of ultrasonics by Magnetostriction and piezoelectric methods - Detection of ultrasonics - acoustic grating -Non Destructive Testing – pulse echo system through transmission and reflection modes – applications

## **Unit-V Crystallography and X-ray Diffraction**

### **Crystallography:**

Introduction-Space lattice, Basis, Unit Cell and Lattice Parameters-, Bravais lattices,-Crystal Systems (3D)- coordination number-Packing fraction of SC, BCC and FCC structures.

## **X-ray Diffraction:**

Introduction - Miller indices-Separation between successive (hkl) planes. Bragg's Law-X-ray Diffractometer-Crystal Structure determination by Laue's and Powder Methods (Qualitative).

## **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.

## **Reference Books:**

1. Gerd Keiser "Optical Fiber Communications"- 4/e, Tata Mc GrawHill ,2008
2. Charles Kittel "Introduction to Solid State Physics",Wiley Publications,2011
3. S.M.Sze "Semiconductor devices-Physics and Technology"-Wiley,2008
4. Halliday, Resnick and Walker, "Fundamentals of Physics", John WileySons.
5. M.R. Srinivasan, Engineering Physics, NewAge International Publishers

## **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: Explain sound waves and its propagation/absorption of construction material used in design of buildings. Analyze acoustic parameters of typical materials used in buildings. Recognize sound level disruptors and their application in architectural acoustics. Identify the use of ultrasonics in diversified fields of NDT.
- CO5: Interpret various crystal systems and Analyze the characterization of materials by XRD. Identify the important properties of crystals like the presence of long-range order and periodicity, structure determination using X-ray diffraction technique. Analysis of structure of the crystals by Laue and Powder techniques.





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### 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	<b>Communicative English</b>				
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 Sentences 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://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.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

L	T	P	C
2	0	2	3

#### COURSE OBJECTIVES:

- To introduce the students to use drawing instruments and to draw polygons, Engg. 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, Cycloids, Involutives, tangent & normal for the curves.

**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 and axis inclined to both 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:

- construct Engg. Curves and scales
- understand orthographic projections, projections of points & lines.
- draw the projections of a plane inclined to both the planes.

- draw the projections of various types of solids in different positions inclined to one or both the planes.
- visualize and convert the isometric view to orthographic view and vice versa.

**TEXT BOOKS:**

1. N.D. Bhatt, Engineering Drawing, Charotar Publishing House Pvt. Ltd, 1<sup>ST</sup> edition, 2012.
2. Bansal Agarwal&C.M.Agarwal, Engineering Drawing, Tata McGraw Hill, 3<sup>rd</sup> edition, 2019.

**REFERENCE BOOKS:**

1. K.L.Narayana& P. Kannaiah, Engineering Drawing, Scitech Publications, Revised edition, 2010.
2. K.C. John, Engineering Graphics for Degree, PHI Learning, 1<sup>st</sup> edition, 2009.
3. PI Varghese, Engineering Graphics, McGraw-Hill Publishers, 1<sup>st</sup> edition, 2017.
4. P.S. Gill, Engineering Drawing, S.K. Kataria& Sons, 1<sup>st</sup> edition, 2013.



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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](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>



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<b>Year/Semester</b>	I B. Tech-I Sem	L	T	P	C
<b>Regulation Year</b>	R-20 2020-21	0	0	3	1.5
<b>Name of the Subject</b>	<b>English Communication Skills Lab</b>				
<b>Branch</b>	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<sup>++</sup>, NBA & Affiliated to JNTUK, Kakinada

## Department of Basic Science Syllabus: I B.Tech-I Semester (R-20 Regulations) (Common to ME & CE)

**Course Title: Engineering 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

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

## 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