# **MATHEMATICS-I**

(Common to All Branches)

I Semester		L	Т	Р
Course Code	: VI8MAT01	3	1	0
Credits	: 4			

#### **Course Outcomes:**

### At the end of the course student will be able to:

**CO1:** Apply matrix technique to solve system of linear equation.

**CO2:** Find Eigenvalues and Eigen vectors

**CO3:** Solve the ordinary differential equations of first order & first degree

CO4: Solve the linear differential equations of higher order

**CO5:** Calculate maxima and minima of functions of two variables

**CO6:** Solve first order partial differential equations.

## **UNIT I: Linear system of equations:**

Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination – Gauss Jordon-Gauss Jacobi and Gauss Seidal methods.

Applications: Finding the current in electrical Circuits.

## UNIT II: Eigen values - Eigen vectors and Cayley-Hamilton theorem:

Eigenvalues - Eigen vectors - Properties - Cayley-Hamilton theorem (without proof) - Inverse and powers of a matrix by using Cayley-Hamilton theorem.

### UNIT-III: Differential equations of first order and first degree:

Linear-Bernoulli-Exact-Reducible to exact differential equations.

Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal Trajectories.

## UNIT IV: Linear differential equations of higher order:

Linear non homogeneous differential equations of higher order with constant coefficients involving RHS term of the type e ax, sin ax, cos ax, polynomials in x, e ax V(x), xV(x)- method of variation of parameters.

## **UNIT V: Partial differentiation:**

Introduction- Homogeneous function-Euler's theorem-total derivative-chain rule-generalized mean value theorem for single variable (without proof)-Taylor's and Maclaurin's series expansion of functions of two variables (without proof)– Functional dependence- Jacobian.

**Applications**: maxima and minima of functions of two variables without constraints and Lagrange's method (with constraints).

## UNIT VI: First order Partial differential equations:

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation.

## **Text Books:**

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers.

2. N.P.Bali, Engineering Mathematics, Lakshmi Publications.

## **Reference Books:**

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-India

- 2. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press
- 3. Srimanta Pal, Subodh C.Bhunia, Engineering Mathematics, Oxford University Press.
- 4. Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd, Delhi.

## MATHEMATICS-II (Common to All Branches)

		(common to An Dranches)			
II Semester			L	Т	Р
Course Code	: VI8MAT02		3	1	0
Credits	4				

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

**CO1:** Estimate approximate root of algebraic and transcendental equations

**CO2:** Compute interpolating polynomial for the given data

**CO3:** Solve ordinary differential equations using numerical methods

**CO4:** Evaluate multiple integrals and improper integrals

**CO5:** Calculate gradient of a scalar function, divergence and curl of a vector function.

**CO6:** Apply the knowledge of vector integral concepts to find characteristics of vector fields

# UNIT I: Solution of Algebraic and Transcendental Equations:

Introduction- Bisection method – Method of false position – Iteration method – Newton-Raphson method (One variable).

## UNIT II: Interpolation:

Introduction- finite differences- forward differences backward differences – central differences – symbolic relations and separation of symbols - differences of a polynomial-Newton's formulae for interpolation - Lagrange's interpolation formula.

## UNIT III: Numerical Integration and solution of Ordinary Differential equations:

Trapezoidal rule- Simpson's 1/3rd and 3/8th rule-Solution of ordinary differential equations by Taylor's series- Euler's method - Runge-Kutta method (second and fourth order).

## **UNIT IV: Multiple Integrals:**

Definition of Improper integrals - Double and triple integrals – Change of variables – Change of order of integration.

Applications: Finding areas and volumes.

## **UNIT V: Vector Differentiation:**

Vector differential operator - Gradient- Divergence- Curl - Laplacian and second order operators - Vector identities.

## **UNIT VI: Vector Integration:**

Line integral: Work done – Potential function – Surface and volume integrals - Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems.

## **Text Books:**

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers.

2. N.P.Bali, Engineering Mathematics, Lakshmi Publications.

## **Reference Books:**

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-

2. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press

- 3. V.Ravindranath and P.Vijayalakshmi, Mathematical Methods, Himalaya Publishing House. India
- 4. Srimanta Pal, Subodh C.Bhunia, Engineering Mathematics, Oxford University Press.
- 5. Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd, Delhi

# **ENVIRONMENTAL STUDIES**

(Common to All Branches)

I Semester		L	Т	Р
Course Code Credits	: V18CHT02 : MNC	3	0	0

### **Course Outcomes:**

At the end of the course, the student should be able to:

CO1: Identify the global environmental challenges and the possible means to combat them.

CO2: Examine the natural resources, their availability for the sustenance of the life and conservation.

CO3: Assess the concepts of the ecosystem and the need for protecting various ecosystems.

CO4: Discuss the biodiversity, threats and conservation practices to protect the biodiversity

CO5: Explain various attributes of the pollution and waste management practices.

CO6: Outline the environmental management and environmental legislations in India.

**UNIT I: FUNDAMENTALS OF ENVIRONMENTAL STUDIES:** Definition and components of environment, Global Environmental Challenges: Global warming and climate change- Kyoto protocol, Acid rains, Ozone layer depletion -Population explosion and effects.

**UNIT II: NATURAL RESOURCES AND ASSOCIATED PROBLEMS:** Forest resources: Use and over exploitation - Deforestation: Timber extraction, Mining, dams and other effects on forest and tribal people. Water resources: Use and over utilization of surface and ground water – Floods, drought, conflicts over water - Dams: Benefits and problems.

Mineral resources: Use and exploitation - Environmental effects of extracting and using mineral resources. Energy resources: Renewable and Non-renewable energy sources.

Land resources: Land degradation, Wasteland reclamation.

**UNIT III: ECOSYSTEMS** Concept of an ecosystem - Structure and function of an ecosystem: Producers, consumers and decomposers - Energy flow in the ecosystem – Food chains, food webs and Ecological pyramids. Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems -Introduction, types, characteristic features.

**UNIT IV: BIODIVERSITY AND ITS CONSERVATION** Definition-Values of biodiversity: Consumptive use, Productive use, Social use. Hot-spots of biodiversity - Threats to biodiversity: Habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity.

**UNIT V: ENVIRONMENTAL POLLUTION** Definition, Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution and Nuclear Pollution.

Solid Waste Management: Sources, classification, effects and control measures of municipal and industrial solid wastes.

**UNIT VI: ENVIRONMENTAL LEGISLATION AND THE MANAGEMENT** Human Rights to a clean environment provided by Constitution. Environmental Protection Act, 1986 - Air (Prevention and Control of Pollution) Act, 1981 - Water(Prevention and Control of Pollution) Act, 1974 -Wildlife (Protection) Act, 1972 -Forest (Conservation) Act, 1980 -Issues involved in enforcement of environmental legislation – Eco-tourism.

### Text books:

- 1. Environment Studies, Fourth Edition, Anubha Kaushik, C P Kaushik, New Age International Publishers.
- 2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi.
- 3. Fundamentals of Environment Studies, DD Mishra, S Chand & Co Ltd.
- 4. Textbook of Environmental Science, M. Anji Reddy, B S Publications, Hyderabad.

# **ENGINEERING CHEMISTRY**

## (Common to All Branches)

II Semester		-	L	Т	Р
Course Code	: V18CHT01		3	1	0
Credits	4				

### **Course Outcomes:**

At the end of the course, the student should be able to:

- **CO1:** Apply different plastics and rubbers for various engineering applications.
- **CO2:** Assess the quality of fuels and apply the knowledge of fuels for the preservation of natural fuels.
- **CO3:** Understand relevant concepts of Electro Chemistry to apply them in designing electrochemical energy systems.
- **CO4:** Analyze boiler troubles arising due to poor water quality and suggest suitable water treatment methods for different industrial applications.
- **CO5:** Analyze the causes for practical corrosion problems and apply corrosion principles for protection of metallic structures from corrosion.
- **CO6:** Identify the important applications of advanced engineering materials.

## **UNIT I: HIGH POLYMERS**

Polymerisation: Introduction- Mechanism of Free radical addition polymerization – Plastics as engineering materials: advantages and limitations – Thermoplastics and Thermosetting plastics – Compounding and fabrication techniques (Compression, Injection, Transfer and Extrusion) -Preparation, properties and applications of Polythene (HDPE and LDPE), PVC, Bakelite, and Teflon. Elastomers: Natural rubber – Vulcanization of rubber – Synthetic Rubbers: Preparation, properties and applications of Buna S, Buna N, and Thiokol.

## **UNIT II: FUEL TECHNOLOGY**

Fuels – Characterstics of good fuel – Classification – Calorific value - HCV and LCV – Dulong's formula, Numerical problems – Bomb calorimeter – Numerical problems.

Solid fuels - Coal – Proximate and ultimate analysis – Significance of the analyses, Numerical problems.

Liquid fuels –Petroleum- Refining – Cracking – Synthetic petrol (Fischer Tropsch and Bergius process) – Knocking - Octane and Cetane ratings – Anti-knocking agents.

Gaseous fuels – Natural gas, LPG and CNG – Biofuels.

## **UNIT III: ELECTROCHEMICAL CELLS**

Single electrode potential – Electrochemical series and its significance - Standard electrodes (Hydrogen, Calomel and, Glass electrodes)– Conductometric titrations (Acid – Base).

Batteries: Primary battery (Dry Cell) – Secondary batteries (Lead acid cell, Ni-Cd cells).

Fuel cells: H<sub>2</sub>-O<sub>2</sub> fuel cell, H<sub>2</sub>-methanol fuel cell.

## **UNIT IV: WATER TECHNOLOGY**

Hard water - Types of Hardness – Units of hardness - Determination of hardness and alkalinity -Boiler troubles: Priming and foaming, sludge and scale formation, Boiler corrosion, Caustic embrittlement - Softening of hard water: Zeolite process, Lime – Soda process, and Ion exchange process - Water for drinking purposes - Purification – Sterilization and disinfection: Chlorination, Break point chlorination – Desalination - Reverse Osmosis and Electrodialysis.

## **UNIT V: CORROSION**

Definition – Theories of Corrosion (Chemical & Electrochemical) – Types of electrochemical corrosion (Galvanic corrosion, Concentration cell corrosion,Stress corrosion Pitting corrosionand Intergranular corrosion) - Galvanic series - Factors which influence the rate of corrosion - Protection from corrosion:Metallic coatings (Cathodic and Anodic), Cathodic protection, Protective coatings –Methods of application of coatings on metals (Galvanizing, Tinning, &Electroplating) – Paints.

## **UNIT VI: CHEMISTRY OF ADVANCED MATERIALS**

Nano materials: Introduction – Carbon nano tubes - Types, preparation (Arc discharge, Laser ablation and CVD Method) - Properties and applications of Nano materials.

Liquid crystals: Introduction – Types – Applications.

Biodegradable polymers – Conducting polymers.

Green Chemistry: Principles, Need for green Chemistry.

## **Text Books:**

- 1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publications & Co.
- 2. A Text book of Engineering Chemistry by S. S. Dara; S. Chand & Co Ltd.

- 1. Engineering Chemistry of Willey India Pvt. Ltd., Vajiram and others.
- 2. Engineering Chemistry by PrasanthRath, Cengage Learning.
- 3. Engineering Chemistry by Shikha Agarwal; Cambridge University Press.
- 4. B. Sivasankar, Engineering Chemistry, McGraw-Hill.

# ENGINEERING CHEMISTRY LABORATORY

(Common to All Branches)

II Semester		L	Т	Р
Course Code Credits	: V18CHL01 : 1.5	0	0	3

### **Course Outcomes:**

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

**CO1:** Analyse quantitatively a variety of samples using volumetric methods and instrumental methods.

**CO2:** Applying volumetric and instrumental methods for the determination of water quality parameters namely Alkalinity, Hardness and pH.

**CO3:** Prepare polymeric materials and analyse the given coal samples.

## List of Experiments:

- 1. Introduction to chemistry laboratory Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis etc.,
- 2. Trial experiment Estimation of HCl using standard Na<sub>2</sub>CO<sub>3</sub> solution.
- 3. Estimation of KMnO<sub>4</sub>using standard oxalic acid solution.
- 4. Determination of alkalinity of a sample of water.
- 5. Determination of total hardness of water using standard EDTA solution.
- 6. Determination of rate of corrosion of mild steel in acidic environment in the absence and presence of an inhibitor.
- 7. Estimation of ferrous iron using standard K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>solution.
- 8. Estimation of copper using standard EDTA solution.
- 9. Estimation of vitamin C using standard lodine solution.
- 10. Estimation of pH of the given sample solution using pH meter.
- 11. Conductometric titration between strong acid and strong base.
- 12. Potentiometric titration between strong acid and strong base.
- 13. Proximate analysis of coal.
- 14. Preparation of phenol formaldehyde resin.

- 1. Practical Engineering Chemistry by K. Mukkanti, B.S. Publications.
- 2. Vogel's Quantitative Chemical Analysis V Edition Longman.
- 3. A Text Book on experiments and Calculations Engineering by S.S.Dara, S.Chand& Co Ltd.
- 4. Chemistry Practical Manual, Lorven Publications.

#### SYLLABUS ENGLISH-I (Common to All Branches)

		(common to m branches)			
I Semester			L	Т	Р
Course Code	: V18ENT01		2	0	0
Credits	: MNC				

#### **Course Outcomes:**

- **CO-1:** Understand human resources and their contribution to the society, listen to and read a text to comprehend, interpret and answer questions, and use prepositions and tenses appropriately.
- **CO-2:** Appraise the problems of transport and the solutions, write the gist of a short-story, know the etymological roots of words, use prefixes and exhibit basic skills in writing.
- **CO-3:** View Solar Energy as a viable alternative source, and read for comprehension, analysis and interpretation and present narratives in writing.
- **CO-4:** Evaluate various alternative sources of energy, spell words appropriately, pronounce them with proper stress, punctuate sentences correctly and narrate instances and stories.
- **CO-5:** Realize the value of our living environment, describe animals, birds, objects, events, processes, etc., write paragraphs coherently and use connectors effectively.
- **CO-6:** Grasp the vital role of training in industrial organizations, use prepositions, take notes, follow the office etiquette and write impressive narrations.

### Unit-1:

**Human Resources:** (From 'English for Engineers and Technologists'), Human resources and their contribution to the society, Word Stress, Simple Present Tense and Simple Past Tense, Using Present Continuous Tense, Role-play, Prepositions and Verb forms : Correct usage, Phrases and Clauses, Reading Skills development, Paragraph writing : Cohesion

**An Ideal Family:** A short story by **Catherine Mansfield** (From 'Panorama: A Course on Reading') Vocabulary

## Unit-2:

**Transport: Problems and Solutions** (From 'English for Engineers and Technologists') Etymological roots, Prefixes, Pronunciation, Parts of Speech, Useful expressions, Writing Skills development, Writing Minutes of Meeting

War: A short story by Luigi Pirandello (From 'Panorama: A Course on Reading') Vocabulary Unit-3:

**Evaluating Technology** (From 'English for Engineers and Technologists'), Writing, Reading Comprehension

**The Verger**: A short story by **Somerset Maugham** (From 'Panorama: A Course on Reading'), Vocabulary, Antonyms and abbreviations

Unit-4:

**Energy: Alternative Sources** (From 'English for Engineers and Technologists'), Word Stress, Antonyms, Suffixes, Comprehension, Spelling and Punctuation, Sentence structures

**The Scarecrow**: A short story by **Satyajit Ray**, (From 'Panorama: A Course on Reading'), Vocabulary

Unit-5:

**Our Living Environment** (From 'English for Engineers and Technologists'), Connectors, Describing an animal/ a bird, Verb forms: practice, Reading Skills development, Writing Skills development, Making notes

A Village Lost to the Nation: A short story by Krishna Chandra Pujari (From 'Panorama: A Course on Reading'), Vocabulary

# Unit-6:

**Industry: Safety and Training** (From 'English for Engineers and Technologists'), Taking notes, Prepositions, Reading Skills development, Word formation: Etymological Roots, Writing Skills development, Office Etiquette

Martin Luther King and the African: A short story by Chinua Achebe

(From 'Panorama: A Course on Reading'), Vocabulary

Books Prescribed:English for Engineers and Technologists, Orient BlackSwan Pvt Ltd.Panorama: A Course on Reading, Oxford University Press (Prescribed for I<br/>B.Tech students of the JNTUK, Kakinada under R16 Regulation)

# Suggested Readings from AICTE

1. Practical English Usage. Michael Swan, OUP. 1995

2. Remedial English Grammar, F.T. Wood. Macmillian, 2007

3. On Writing Well. William Zinsser.Harper Resource Book. 2001

4. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press 2006

5. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press.2011

6. Exercises in Spoken English. Parts, I-III. CIEFL, Hyderabad Oxford University Press

# **Books for further reference**

1. The Oxford guide to Writing & Speaking – John Seely

2. Technical Communication: Principles and practice – Meenakshi Raman & Sangeetha Sharma, Oxford University Press, New Delhi, 2014. (For Gujarat Technological University)

3. Business communication Concepts, Cases and Application – P.D. Chaturvedi and Mukhesh Chaturvedi, Pearson Education, Delhi, 2006.

4. The Students' Companion – Wilfred D. Best (New Edition) – Harper, Collins Publishers, 2012.

# **ENGLISH COMMUNICATION SKILLS LAB - I**

(Common to All Branches)

I Semester		L	Т	Р
Course Code	: V18ENL01	0	0	2
Credits	:MNC			

### **Course Outcomes**

**CO-1:** Listen to and make inquiries on phone, thank and respond to thanks in appropriate spoken idiom.

**CO-2:** Make requests, give permissions and directions in fluent English

**CO-3:** Articulate well in the contexts of clarifying, inviting, complaining, congratulating, apolozing, advising, agreeing and disagreeing in conversational mode

**CO-4:** Distinguish and pronounce letters and sounds of English phonetically

**CO-5:** Practice and pronounce consonants, vowels and diphthongs and consonant clusters

**CO-6:** Listen to and understand different accents in English, and pronounce English words and speak sentences with right stress and intonation.

**Unit-1:** Why Study Spoken English, Making Inquiries on the Phone, Thanking and Responding to Thanks, Practice Work

Unit-2: Requests, Permissions, and Directions, Practice Work

**Unit-3:** Clarifying, Inviting, Complaining, Congratulating and Expressing Sympathy, Apologising, Advising, Suggesting, Agreeing and Disagreeing, Practice Work

Unit-4: Letters and Sounds, Practice Work

Unit-5: The Sounds of English, Practice Work

**Unit-6:** Pronunciation, Stress and Intonation, Practice Work Book Prescribed:

## Interact: English Lab Manual for Undergraduate Students:

Orient BlackSwan (Prescribed for I B.Tech students of the JNTUK, Kakinada under R16 Regulation) **Books for further reference:** 

- 1. The Official Cambridge Guide to IELTS, For Academic & General Training, (With DVD-ROM), Student Book with Answers, 2015.
- 2. English Language Communication Skills, Lab Manuel cum Workbook (with CD), Cengage Learning.

## ENGLISH-II (Common to All Branches)

II Semester		L	Т	Р
Course Code	: V18ENT02	2	0	0
Credits	2			

#### **Course Outcomes**

**CO-1:** Understand the real import of education and work of noble men, use nouns, verbs and

adjectives appropriately, identify and correct common errors in usage and write official letters.

**CO-2:** Derive inspiration from real life samples, interpret and speak on them, use synonyms and antonyms of words properly and do E-correspondence with required netiquette.

**CO-3:** Assimilate and adjust to new cultural environments, write on life-sketches, make the right use of tense and aspect and concord in sentences and plan and develop speech-writing.

**CO-4:** Imbibe ideas from the lives and works of successful men, use adverbs, develop view-points and topics and write different types of essays.

**CO-5:** Emulate personality-development inputs, elaborate on inspiring scientists use one-word substitutes, develop précis writing and write for the media.

**CO-6:** Learn from the paradigm of great contributors, use collocations and write professional and technical reports in standard formats.

## Unit-1 The Greatest Resource - Education (From 'English Encounters')

Understanding the author's perspective

Making use of nouns

Vocabulary – deriving nouns from verbs and adjectives

Misplaced modifiers

Synonyms and Antonyms

Identifying common errors

Letter writing : Standard formats for official letters

**A.P.J. Abdul Kalam** (From 'The Great Indian Scientists')

Synonyms and Anonyms

### Unit-2 Jadav Payeng : 'The Forest Man of India'

Vocabulary : deriving adjectives

Synonyms and Antonyms

Identifying common errors in the use of adjectives

E-correspondence with required Netiquette

Cliches

C.V. Raman (From 'The Great Indian Scientists')

Use of Synonyms and Antonyms of words in different contexts

## Unit-3 Cultural Shock : Adjustment to New Cultural Environments

(From 'English Encounters')

Building Vocabulary – Verbs and nouns

Synonyms and Antonyms and appropriate usage

Making use of Tense and aspect and subject-verb agreement in sentences

Planning and developing speech-writing

**Reading comprehensions** 

Homi Jahangir Bhabha (From 'The Great Indian Scientists')

Synonyms and Antonyms

Unit-4 Satya Nadella's First Letter to the Employees as CEO of Microsoft

Building Vocabulary – deriving adverbs

Identifying common errors in the use of adverbs

Essay writing : Developing ideas and topics into different types of essays Redundancies

Jagadish Chandra Bose (From 'The Great Indian Scientists')

Using synonyms and antonyms of words in different contexts

## Unit-5 Excerpts from Robin Sharma's 'Who Will Cry When You Die?'

One-word substitutes and usage

Prepositions

Required skills to write for the media

Précis writing

Prafulla Chandra Ray (From 'The Great Indian Scientists')

Using synonyms and antonyms of words in different contexts

## Unit-6 The Chief Software Architect (From 'English Encounters')

Building Vocabulary : Collocations and Usage

Identifying common errors

Report writing – Standard formats and required skills

**Srinivasa Ramanujan** (From 'The Great Indian Scientists')

Using synonyms and antonyms of words in different contexts

## **Books Prescribed:**

## **1. English Encounters**

A Text Book to Face Challenges in Communication Maruthi Publications (Prescribed for I B.Tech students of the JNTUK, Kakinada under R16 Regulation)

Lessons 2,4 and 5 in the above text book have been replaced by the following

- 1. Jadav Payeng : The Forest Man of India by Shreya Pareek, 2014, Net Source: https://www.thebetterindia.com
- 2.Satya Nadella's First Letter to the Employees as CEO of Microsoft, Net Source: <u>https://news.microsoft.com</u>
- 3. Excerpts from Robin Sharma's 'Who Will Cry When You Die?' JAICO Publishing House, Mumbai, 2009

## 4. The Great Indian Scientists, Cengage

## Suggested Readings from AICTE

- 1. Practical English Usage. Michael Swan, OUP. 1995
- 2. Remedial English Grammar, F.T. Wood. Macmillian, 2007
- 3. On Writing Well. William Zinsser. Harper Resource Book. 2001
- 4. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press 2006
- 5. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press.2011
- 6. Exercises in Spoken English. Parts, I-III. CIEFL, Hyderabad Oxford University Press

## Books for further reference

- 1. The Oxford guide to Writing & Speaking John Seely
- 2. Technical Communication : Principles and practice Meenakshi Raman & Sangeetha Sharma, Oxford

University Press, New Delhi, 2014. (For Gujarat Technological University)

3. Business communication Concepts, Cases and Application – P.D. Chaturvedi and Mukhesh Chaturvedi,

Pearson Education, Delhi, 2006.

4. The Students' Companion – Wilfred D. Best (New Edition) – Harper, Collins Publishers, 2012.

V18ENT03 Professional Communication Skills - I	Professional Communication	L	Т	Р	С
	Skills - I	3	0	0	MNC

#### **Course Outcomes:**

	After successful completion of the course, the student will be able to:	Knowledge Level
CO1	Summarize one's introduction in an appropriate manner, exhibit grammatical competence through correction of sentences, analyze noun and pronoun dispositions and develop pre-reading strategies to improve comprehension skills.	K5
CO2	Distinguish singular and plural in different contexts and display knowledge through accurate usage of sentences, build conversations which befit the situations, comprehendthe passages well and, use different kinds of idioms.	K4
CO3	Classify various kinds of adjectives and adverbs, learn natural occurrence of paired words of native speakers, infer the referential and inferential aspects of the passages and make use of idioms while narrating personal experiences.	K4
CO4	Judge and assess the behaviour of people in day to day life using kinesics and proxemics that disclose their disposition and be aware of their personal traits that promote good relations.	K2
CO5	Articulate their goals and have a constructive plan of executing them properly and become adept in oral presentations as well as poster presentations that enhance their professional skills.	K3
CO6	Evaluate various happenings by thinking out of the box and display their latent talent. They can also reduce the stress levels by applying various stress management techniques.	K4

#### UNIT – I

**Self-Introduction:** Basic information - Academic and personal - interests- strengths and weaknesses - goal.

ERROR ANALYSIS: Nouns & Pronouns – Singular & Plural – Kinds of Nouns & Pronouns- Collective Nouns - Personal and Reflexive Pronouns.

READING COMPREHENSION: Reading as a skill – quick reading - analyzing – answering IDIOMS& PHRASES: Colloquial expressions– formal and informal expressions.

#### $\mathbf{UNIT} - \mathbf{II}$

**Error Analysis**: Concord – Subject – Verb agreement.

Role Play: Day to day situations - practical approach - real life experiences.

**Reading Comprehension**: Skimming – scanning - summarizing – problem solving.

Idioms & Phrases: Enriching written and spoken English – use and usage.

#### UNIT – III

Error Analysis: Adjectives – Adverbs – role of modifiers – place of Adjectives– Adverbs of frequency. Collocations: Natural combination of words – closely affiliated with each other. Reading Comprehension: At a glance – close reading – understanding – answering Idioms & Phrases: Communicative - expressive – competent.

#### UNIT -IV

**Inter aqnd Intra Personal Skills**: Leading, Coaching, Interviewing, Managing, Persuading - Self awareness, Self confidence, Good Attitude.

Body Language: Basics of proxemics and kinesics.

#### UNIT -V

**Presentation Skills**: Importance of Presentation skills, Structuring our presentations, Ways to improve our presentation skills, Tips for effective presentations.– oral – Power point – poster. GOAL SETTING: Short-term – long-term – aim – target – vision – How to set SMART goals.

#### UNIT - VI

**Lateral Thinking**: What is creativity, Fundamental approaches to smart thinking, Characteristics of a creative person, Convergent and Divergent thinking.

**Stress Management**: Meaning of Stress, Types of Stress, Symptoms of stress, Short term and long term stress, how can people manage stress.

#### **References:**

1. Essential English Grammar -		Raymond Murphy
2. Advanced English Grammar –		D.S. Paul
3. Word Power Made Easy		<ul> <li>Norman Lewis</li> </ul>
4. English collocations in use -		Michael McCarthy
5. Word Power Made Handy		- ShaliniVarma
6. Barron's GRE		- Barron's
7. Current English Grammar & Usa	age –	R.P Sinha
8. Think & Grow Rich	-	NapoleaonHill
9. Soft Skills for Everyone		- Butterfield, Jeff,
10. Soft Skills		- Chauhan, G.S. and Sangeeta Sharma
11. Theories of Personality		- Hall, Calvin S
12. Corporate Conversations		- Holtz, Shel
13. Communication Skills		- Kumar, Sanajy and PushpLata
14. Winning at Interviews		- Thorpe, Edgar and Showick Thorpe
15. Swami Vivekananda and "Pers	onalit	y Development" published by RK Math.

### Sri Vasavi Engineering College (Autonomous), Pedatadepalli, Tadepalligudem

### OPTICS AND WAVES (For Civil Engineering & Mechanical Engineering)

S.No	Course Code	Course Name		Т	Р	С
1	V18PHT01	PHYSICS: OPTICS AND WAVES	3	1	-	4

#### A student who successfully fulfills the course requirements will be able to:

1. Correlate the engineering concepts based on fundamental Physical Optics with Coherent source. Furthermore, students will be able to solve problems connected with the operation of optical instruments.

2. Study the sound waves & Use modern physics techniques and tools.

3. Illustrate the fundamental concepts of magnetism and dielectrics.

### <u>UNIT-I</u>

**INTERFERENCE:** Introduction- Principle of Superposition – Coherent Sources – Interference in thin films (reflection geometry) – Newton's rings – construction and working principle of Michelson Interferometer **UNIT-II** 

DIFFRACTION: Introduction- Fraunhofer diffraction at single slit - double slit and

N-slits (qualitative only)-Grating equation – Rayleigh's criterion for resolving power- Resolving power of a grating.

#### UNIT-III

**POLARIZATION:** Types of Polarization – Double refraction, Nicol Prism -Quarter wave plate and Half Wave plate.

**LASERS:** Characteristics– spontaneous emission and Stimulated emission of radiation – Einstein's Transition Probabilities- population inversion– pumping schemes-Ruby laser-He-Ne LASER –Applications of laser

#### <u>UNIT-IV</u>

**ACOUSTICS:** Introduction – Types of Acoustics – Sound Absorption – Absorption Coefficient - Reverberation time-Factors Effecting the Reverberation Time - Sabine's Formula- Eyring's Formula – Acoustics of Concert Hall. **UNIT-V** 

**ULTRASONICS:** Introduction- Ultrasonic Transducers - Piezoelectric and Magnetostriction Transducers – Production of Ultrasonic Waves Using Piezoelectric Effect And Magnetostriction Method- Non-Destructive Testing - Pulse Echo Technique – Scan A, Scan B & Scan C Techniques.

### <u>UNIT-VI</u>

**MAGNETIC PROPERTIES:** Introduction- Origin of Magnetic Moment, Classification of Magnetic Materials – Ferromagnetism- Hysteresis – Soft and Hard Magnetic Materials

**DIELECTRIC PROPERTIES:** Introduction, types of polarizations- Electronic, Ionic and Orientation polarizations (qualitative only), – Internal field – Clausius- Mossoti Equation-Dielectric in alternative fields (Dielectric loss, Strength and Breakdown.)

#### Text Books:

- 1. M. Armugam, Engineering Physics
- 2. Dr.P.Sreenivasa Rao, Engineering Physics

- 1. S. Mani Naidu, Engineering Physics.
- 2. S.O.Pillai, Solid State Physics.
- 3. DK Bhattacharya, Engineering Physics.
- 4. Ajoy Ghatak, Optics.
- 5. A.J. Dekker, Solid State Physics.

### Sri Vasavi Engineering College (Autonomous), Pedatadepalli, Tadepalligudem

# OPTO-ELECTRONICS AND SEMICONDUCTORS

#### (For CSE, ECE & EEE)

S.No	<b>Course Code</b>	Course Name	L	Т	Р	С
1	V18PHT02	OPTO-ELECTRONICS AND SEMI CONDUTORS	3	1	-	4

#### A student who successfully fulfills the course requirements will be able to

**1.** Expose the students to the basic concepts of Lasers, optical fibers and their properties.

**2**. Interpret wavelike behavior of matter and how this motivates the need to replace classical mechanics by a wave equation of motion for matter (the Schrödinger equations)

**3**. Distinguish fundamental physical laws for better understanding of materials and their properties for engineering applications.

**4.** Apply fundamental principles and processes to operational semiconductor devices and their uses.

<u>UNIT-I</u> LASERS: Introduction – Coherent Sources – Characteristics of Lasers – Spontaneous and Stimulated Emission of Radiation – Einstein's Coefficients – Population Inversion – pumping schemes-Ruby laser-He-Ne LASER –Applications of LASERs.

<u>UNIT-II</u> FIBER OPTICS: Introduction – Basic Principle of Optical Fiber-Advantages of fibres – Acceptance Angle and Acceptance Cone – Numerical Aperture – Transmission of Signal Through Step Index and Graded Index Fibers – Basic Optical Fiber Communication Link - Application of Optical Fibers.

<u>UNIT-III</u> INTRODUCTORY QUANTUM MECHANICS: Introduction - Matter Waves – Physical Significance of Wave Function – Schrödinger Time Independent Wave Equation – Application of Schrödinger Wave Equation in One Dimensional Potential Box.

**ELECTRON THEORY OF METALS:** Assumptions and Failures of Classical Free Electron Theory – Quantum Free Electron Theory - Fermi Level, Fermi Dirac Distribution Function and Sources of Electrical Resistance in Metals.

**<u>UNIT-IV</u> BAND THEORY OF SOLIDS:** Bloch's Theorem (Qualitative) – Kronig – Penney Model – Formation of Energy Bands in Crystalline Solids – Classification of Crystalline Solids Based on Band Theory - E-K Relation - Effective Mass of an Electron - Concept of Hole.

<u>UNIT-V</u> SEMICONDUCTOR PHYSICS: Introduction - Types of Semiconductors – Energy Band Diagrams, Carrier Concentration in Intrinsic Semiconductors – Expression for Conductivity-Extrinsic semiconductors-Carrier concentrations- Drift and Diffusion Currents – Relevance of Einstein's Equation- Hall Effect and its Applications-Direct and Indirect band gap semiconductors.

<u>UNIT-VI</u> SEMICONDUCTOR DEVICS: Introduction- p-n junction Diode, Zener Diode ,Photo detectors- Photo Diode , Pin Diode ,Construction Working Principle of Solar Cell and Light emitting diode .

Text Books:

1. MN Avadhanulu & PG Kshirsagar, A Text Book of Engineering Physics.

2. DK Bhattacharya, Engineering Physics.

- 1. P.Battacharya, Semiconductor Optoelectronic Devices.
- 2. A Ghatak, Optics
- 3. S.O.Pillai , Solid State Physics
- 4. Dr.P. Sreenivasa Rao, Applied Physics
- 5. John M Senior, Optical Fiber Communications Principles and Practices
- 6. A.J.Dekkar , Solid State Physics.

### Sri Vasavi Engineering College (Autonomous), Pedatadepalli, Tadepalligudem

### **Optics & Waves Lab**

#### For ME & CE

S.No	Course Code	Course Name	L	Т	Р	С
1	V18PHL01	Optics & Waves Lab	-	-	3	1.5

## **List of Experiments:**

#### (Any eight of the following to be done)

- 1. Determination of Rigidity modulus of a material Torsional Pendulum
- 2. Determination of acceleration due to gravity Compound Pendulum
- 3. Verification of laws of vibrations in stretched strings Sonometer
- 4. Determination of velocity of sound Volume Resonator
- 5. Magnetic field Induction along the axis of current carrying coil Stewart and Gee's apparatus.
- 6. Determination of Planck's constant using photocell.
- 7. Determination of wave length of laser source using diffraction grating.
- 8. Melde's experiment Transverse and longitudinal modes.
- 9. Coupled oscillator Study two normal modes of coupled oscillator.
- 10. Determination of radius of curvature of Plano convex lens by forming Newton's rings.

# **Opto Electronics & Semiconductors Lab**

### For ECE, EEE & CSE

S.No	Course Code	Course Name	L	Т	Р	С
1	V18PHL02	Opto Electronics & Semiconductors Lab	-	-	3	1.5

#### **List of Experiments:**

### (Any eight of the following to be done)

- 1. Newton's rings Radius of curvature of Plano Convex Lens.
- 2. Determination of wavelength of laser source using diffraction grating.
- 3. L-C-R Series Resonance Circuit.
- 4. Study of V/I Characteristics of Semiconductor diode.
- 5. Study of V/I Characteristics of zener diode.
- 6. Characteristics of Thermistor Negative Temperature Coefficient of resistivity.
- 7. Energy band gap of a Semiconductor p-n junction.
- 8. Determination of Hall Coefficient and Carrier Concentration Hall Effect
- 9. Determination of Planck's constant using photocell.
- 10. Study the Characteristics of a photo diode.