

**I Year Syllabus Department of Electronics and Communication
Engineering
(R14(R) Regulation)**



SHRI VISHNU ENGINEERING COLLEGE FOR WOMEN :: BHIMAVARAM
(Autonomous)

Department of Electronics and Communication Engineering

Course Structure

(with effect from AY 2015-2016)

I Year –I Semester

S.No.	Subject Code	Subject Title	L	T	P	C	I	E	TM
1	UGBS1T01	English – I	3	-	-	3	40	60	100
2	UGBS1T02	Engineering Mathematics - I	3	2	-	4	40	60	100
3	UGBS1T03	Engineering Mathematics - II	3	2	-	4	40	60	100
4	UGBS1T04	Engineering Physics	3	-	-	3	40	60	100
5	UGCS1T01	Programming with C	3	-	-	3	40	60	100
6	UGBS1T06	Environmental Science	3	-	-	3	40	60	100
7	UGBS1P07	English Communication Skills Lab - I	-	-	3	1	25	50	75
8	UGBS1P08	Engineering Physics Lab	-	-	3	1	25	50	75
9	UGCS1P02	C Programming Lab	-	-	3	1	25	50	75
Total			18	4	9	23	315	510	825

I Year –II Semester

S.No.	Subject Code	Subject Title	L	T	P	C	I	E	TM
1	UGBS2T01	English – II	3	-	-	3	40	60	100
2	UGBS2T03	Engineering Mathematics – III	3	2	-	4	40	60	100
3	UGBS2T05	Engineering Chemistry	3	-	-	3	40	60	100
4	UGXX2T01	Professional Ethics & Human Values	3	-	-	3	40	60	100
5	UGEE2T01 UGEC2T01 UGME2T02 UGCE2T01 UGCS2T03	Foundation Elective	3	-	-	3	40	60	100
		Basic Electrical Engineering							
		Basic Electronics Engineering							
		Basic Mechanical Engineering							
		Basic Civil Engineering							
Introduction to Computer & Problem Solving									
6	UGME2T01	Engineering Drawing	2	-	3	3	40	60	100
7	UGBS2P07	English Communication Skills Lab - II	-	-	3	1	25	50	75
8	UGBS2P09	Engineering Chemistry Lab	-	-	3	1	25	50	75
9	UGME2P03	Engineering Workshop	-	-	3	1	25	50	75
Total			17	02	12	22	315	510	825

*L – Lecture hours, T – Tutorial hours, P – Practical hours, C – Credits,
IM – Internal marks, EM – External Marks, TM – Total Marks*

**I Year I-Semester Syllabus Department of Electronics and
Communication Engineering
(R14(R) Regulation)**

Name of the Subject: **English – I**
 (Common to all Branches)
Regulation year : 2015-16

Subject Code : UGBS1T01
Year / Semester : I / I
Theory : 3 hrs
Credits : 3

Course Objectives:

- To train students in all LSRW Skills in order to make them independent, lifelong learners by availing of these four skills.
- To prepare the students to face the emerging challenges of the world.
- To inculcate the habit of reading beyond academics among students and enabling them to be competent communicators on various platforms.
- To expose students to different cultural contexts.

Course Outcomes:

After completion of the course the student will be able to

- CO 1.** To clearly understand the advantages of economizing, staying fit and healthy.
- CO 2.** To learn to understand the sources of knowledge in society for better outlook about resources to be tapped.
- CO 3.** To learn to adjust with people and surroundings and make a steady progress in life.
- CO 4.** To be able to develop right attitude towards nature and to live in harmony with environment.
- CO 5.** To be able to write or speak cohesively and coherently and flawlessly avoiding grammatical errors, using a wide range expressions, organizing the ideas logically on a topic.
- CO 6.** To be aware of civilization and its real meaning

Syllabus:

UNIT-I	
Lesson:	IN LONDON: M.K.GANDHI
Grammar	Kinds of Verbs, Usage of Tenses (Present, Past, Future) (Simple, Continuous, Perfect, Perfect continuous tenses)
	Sequence of tenses, Conditional tenses
Speaking	Describing oneself, Place, family, friend
	Describing an object, a monument, a historical place, Process, Narrating a story or an incident
Listening	Listening to an audio lecture or a talk and answer the questions.

UNIT-II	
Lesson:	The KNOWLEDGE SOCIETY: APJ ABDUL KALAM
Grammar	Usage of Auxiliary/Modal verbs (Functional usage)
	Effective sentence structures , Use of connectives, Changing the word forms
Writing	Free writing on a given topic
	Paragraph writing
Speaking	Framing questions based on tenses and answering

UNIT-III	
Lesson:	Dialogue on Civilization : CEM Joad
Grammar	Interchanging of sentences, Subject Verb agreement
Reading	Reading Comprehension
Speaking	Picture description

Assignment: I Each student has to read a book of her interest (Novel, Short stories, Academic, Literary or technical) and submit the content of the book in the form of a report/essay and has to give the overview of the book by means of an oral presentation of 15 min. duration in the class before the completion of MID-I examination. It is mandatory for all the students.

❖ It is only for Internal Assessment

UNIT-IV	
Lesson:	GAZAR HALWA : GITA HARIHARAN
Grammar	Transforming sentences: Direct and Indirect speech Simple, compound and complex sentences
Writing	Arranging jumbled sentences in order
speaking	Expansion of a proverb(speaking /writing)

UNIT-V	
Lesson:	REACHING FOR THE STARS: KALPANA CHAWLA
Grammar	Transforming sentences: Active and Passive voice
Writing	Information transfer-pie chart, Flow chart, tables, Bar chart
Listening	Listening comprehension

UNIT-VI		
Lesson:	THE TREE LOVER:RUSKIN BOND	
Grammar	Spotting errors	
Creative writing and speaking	Poster presentation, E-mail messaging ,SMS messaging, Preparing a special day messages, Preparing an invitation, Developing a story using clues , Caption writing, Creating an advertisement	Questions will not be asked from this chapter in the examination

Assignment: II Each student has to read a book of her interest (Novel, Short stories, Academic, Literary or technical) and submit the content of the book in the form of a report/essay and has to give the overview of the book by means of an oral presentation of 15 min. duration in the class before the completion of MID-II examination. It is mandatory for all the students.

❖ It is only for Internal Assessment

Text Books

1. English Essentials: Ravindra Publications

References

1. Martin Hewings: Advanced English Grammar
2. Rizvi, Ashraf. M. Effective Technical Communication. Tata McGraw-Hill, New Delhi. 2005
3. A.V Martin & A.J. Thompson: A Practical Grammar & Usage
4. Norman Lewis: Word Power Made Easy
5. Basic English usage by Michael Swan
6. Situational Grammar by M.I. Dubrovin
7. A New approach to Objective English by Dhillon Group of Publications

Extensive Reading (Not for Examination)

1. Kalam, Abdul, Wings of Fire. Universities Press, Hyderabad. 1999.
2. Trailblazers
3. Indlish Jyothi Sanyal
4. Stories of humour, adventure, mystery and autobiographies of eminent scientists/personalities

Name of the Subject: **Engineering Mathematics-I**
 (Common to all Branches)
 Regulation year : **2015-16**

Subject Code : **UGBS1T02**
 Year / Semester : **I / I**
 Theory : **3+2 hrs**
 Credits : **4**

Course Objectives:

- To provide the students with techniques to solve differential equations by analytical methods and also by Laplace transform method and apply them to engineering disciplines.
- To train the students to solve real time engineering problems using partial differential equations.

Course Outcomes:

After completion of the course the student will be able to

- CO 1.** Solve ordinary differential equations by analytical methods.
- CO 2.** Model a differential equation and solve real time engineering problems.
- CO 3.** Find the Laplace transform of various functions and apply it to solve differential equations.
- CO 4.** Gain knowledge of the basic concepts of partial differentiation
- CO 5.** Solve linear Partial Differential equations and apply them to problems of wave and heat equations

Syllabus:

UNIT	TOPICS
I	DIFFERENTIAL EQUATIONS OF FIRST ORDER AND FIRST DEGREE Solution of Differential equation-Geometrical meaning: Method of Isoclines Linear-Bernoulli-Exact-Reducible to exact equations.
II	LINEAR DIFFERENTIAL EQUATIONS OF HIGHER ORDER Non-homogeneous equations of higher order with constant coefficients with RHS term of the type e^{ax} , $\sin ax$, $\cos ax$, polynomials in x , $e^{ax} V(x)$, $xV(x)$, Euler's and Cauchy's equations.
III	LAPLACE TRANSFORM Laplace transform of standard functions-Shifting Theorems, Transforms of derivatives and integrals, multiplication by t^n , division by t , Periodic functions – Unit step function – Dirac's delta function- Inverse Laplace transforms-Properties- Convolution theorem (without proof).
IV	PARTIAL DIFFERENTIATION AND FIRST ORDER PARTIAL DIFFERENTIAL EQUATIONS Functions of several variables, Partial Differentiation, Chain rule, Taylor's series for two variables, Jacobian, Functional dependence. Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions-solutions of first order linear (Lagrange) equation and nonlinear (standard type) equations.
V	HIGHER ORDER PARTIAL DIFFERENTIAL EQUATIONS Solutions of Linear Partial differential equations with constant coefficients- Equations

	solvable by direct integration, Homogeneous linear equations with constant coefficients- Rules for finding the complimentary function, Rules of finding the particular Integral, Method of separation of Variables, Laplace & Poisson's equations
VI	APPLICATIONS ENGINEERING MATHEMATICS-I Newton's Law of cooling-Law of natural growth and decay-orthogonal Trajectories, L-R Circuits – LCR circuit, simple Harmonic motion (Elementary models), solution of ordinary differential equation using Laplace transforms-Maxima and Minima of functions of two variables with constraints and without constraints- One-dimensional Wave, Heat equations – two dimensional Laplace Equation.

Text Books

1. B.S.GREWAL, Higher Engineering Mathematics, 42nd Edition, Khanna Publishers
2. ERWIN KREYSZIG, Advanced Engineering Mathematics, 9th Edition, Wiley-India
3. GREENBERG, Advanced Engineering Mathematics, 2nd edition, Pearson education

References

1. DEAN G. DUFFY, Advanced engineering mathematics with MATLAB, CRC Press
2. PETER O'NEIL, Advanced Engineering Mathematics, Cengage Learning.
3. K B DATTA, Mathematical methods of Science and Engineering Aided with MATLAB, Cengage Publications.

Name of the Subject: **Engineering Mathematics-II**
 (Common to ECE, EEE, ME)
 Regulation year : **2015-16**

Subject Code : **UGBS1T03**
 Year / Semester : **I / I**
 Theory : **3+2 hrs**
 Credits : **4**

Course Objectives:

- To assist the students in employing various methods of mathematics to solve real world problems.
- To make the students understand the importance of approximate solutions those are essential in various complex problems.

Course Outcomes:

After completion of the course the student will be able to

- CO 1.** Solve algebraic and Transcendental Equations by using Numerical methods.
- CO 2.** Model and solve real time engineering problems using Interpolation.
- CO 3.** Obtain approximate solutions for ordinary differential equations using Numerical Methods.
- CO 4.** Find Fourier series expansion of various periodic functions, and represent a function in Fourier Integral form and hence find its Fourier transform.
- CO 5.** Find Z- transform of various discrete functions and apply it to solve Difference equations and evaluate improper integrals by using Special Functions.

Syllabus:

UNIT	TOPICS
I	SOLUTIONS OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS Introduction- Bisection Method – Method of False Position – Iteration Method – Newton-Raphson Method.
II	INTERPOLATION Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Relations between operators Finite difference tables- Newton’s formulae for interpolation – Interpolation with unevenly spaced points – Lagrange’s Interpolation formula.
III	NUMERICAL SOLUTIONS OF ORDINARY DIFFERENTIATION EQUATIONS Solution by Taylor’s series – Picard’s Method of successive Approximations-Euler’s Method-Runge-Kutta Methods.
IV	FOURIER SERIES & FOURIER TRANSFORMS Fourier Series: Introduction- Determination of Fourier coefficients – even and odd functions –change of interval– Half-range sine and cosine series. Fourier Transforms: Fourier integral theorem (only statement) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms

V	<p>Z-TRANSFORM & SPECIAL FUNCTIONS</p> <p>Z-transform: Introduction– properties – Damping rule – Shifting rule – Initial and final value theorems -Inverse z transform- -Convolution theorem</p> <p>Special Functions: Beta and Gamma functions- Properties - Relation between Beta and Gamma functions- Evaluation of improper integrals</p>
VI	<p>APPLICATIONS OF ENGINEERING MATHEMTICS-II</p> <p>Applications of Interpolation using Numerical Differentiation and Numerical Integration- Solving LCR circuits using Runge-Kutta method - Amplitude, spectrum of a periodic function by Fourier series, Solution of differential equations by Fourier Transforms, Solution of difference equations by Z -transforms.</p>

Text Books

1. B.S. GREWAL, Higher Engineering Mathematics, 42nd Edition, Khanna Publishers
2. V.RAVINDRANATH and P. VIJAYALAXMI, Mathematical Methods, Himalaya Publishing House

References

1. DEAN G. DUFFY, Advanced Engineering Mathematics with MATLAB, CRC Press
2. ERWYN KREYSZIG, Advanced Engineering Mathematics, 9th Edition, Wiley-India
3. PETER O'NEIL, Advanced Engineering Mathematics, Cengage Learning
4. K B DATTA, Mathematical methods of Science and Engineering Aided with MATLAB, Cengage Publications

Name of the Subject: **ENGINEERING PHYSICS**
 (Common to ECE, EEE, ME)
 Regulation year : **2015-16**

Subject Code : **UGBS1T04**
 Year / Semester : **1 / 1**
 Theory : **3 hrs**
 Credits : **3**

Course Objectives:

- To highlight the hidden importance of physics concepts in Engineering & Technology.
- To facilitate the students with the aid of advanced insight in the applied science.
- To focus on the real time applications of physics in Engineering fields.
- To prepare the students to face the challenges in core fields with the support of physics principles.
- To motivate the students to understand the Engineering Principles through basic ideas in Physics.

Course Outcomes:

After completion of the course the student will be able to

- CO 1.** Learn various optical phenomena analytically in physical optics for good resolution of optical instruments.
- CO 2.** Get the knowledge of applied optics for the fitness of instrumentation.
- CO 3.** Know the fundamentals of crystallography to optimize the utility of materials.
- CO 4.** Have proper understanding of quantum picture of sub atomic world and electron response.
- CO 5.** Learn the hidden importance of semi conductors in the domain of electronic transport mechanism and basic knowledge on experimental results of superconductors.
- CO 6.** Apply the knowledge of magnetic and dielectric properties in engineering

UNIT	TOPICS
I	<p>PHYSICAL OPTICS</p> <p>Interference: Superposition principle – Interference –Interference in thin films by reflection – Newton’s rings – Applications.</p> <p>Diffraction: Introduction – Fresnel and Fraunhofer class of diffraction - Fraunhofer diffraction at single slit – double slit diffraction (qualitative) – Diffraction grating – Resolving power - Rayleigh’s criterion.</p> <p>Polarization: Introduction – Types of Polarization – Double refraction – Quarter wave plate and Half Wave plate – Engineering Applications.</p>
II	<p>LASERS AND FIBER OPTICS</p> <p>Lasers: Introduction – Characteristics of lasers – Spontaneous and Stimulated emission of radiation –Einstein’s coefficients – Population inversion – Ruby laser – Helium Neon laser - Applications of Lasers.</p> <p>Fiber Optics: Introduction – Principle of optical fiber – Acceptance angle – Acceptance</p>

	cone – Numerical aperture – Classification of optical fibers – Fiber optical communication System –Applications of optical fibers
III	<p>CRYSTALLOGRAPHY AND X-RAY DIFFRACTION</p> <p>Introduction – Space lattice – Basis – Unit Cell – Primitive cell-Lattice parameters – Bravais lattices –Crystal systems – Structures and packing fractions of SC, BCC and FCC crystals-Miller indices- X-Ray diffraction – Bragg’s law-Crystal structure determination by powder method</p>
IV	<p>QUANTUM MECHANICS AND ELECTRON TRANSPORT IN SOLIDS</p> <p>Principles of quantum mechanics: de – Broglie hypothesis - matter waves Significance of wave function – Schrodinger Time independent and time dependent wave equations – particle in a one dimensional potential well.</p> <p>Band theory of solids: Classical free electron theory – Merits and demerits - Quantum free electron theory- Bloch theorem (qualitative) – Kronig – Penney model (Qualitative) – Origin of energy band formation in solids – Classification of materials into conductors, semi – conductors & insulators.</p>
V	<p>SEMICONDUCTOR PHYSICS , SUPERCONDUCTIVITY AND NANO MATERIALS</p> <p>Semiconductor Physics : Intrinsic and Extrinsic semiconductors– direct & indirect band gap semiconductors- Hall Effect</p> <p>Super Conductivity : Critical temperature – Isotope effect – Critical Magnetic field – critical current –Meissner effect – Type – I and Type – II Super conductors – Flux quantization – BCS theory(Qulitative)-Applications of Super conductors.</p> <p>Nano Materials : Introduction– Properties- Quantum confinement – Synthesis of nano material by CVD- Properties of carbon nano tubes and graphene - applications of nano materials.</p>
VI	<p>MAGNETIC AND DIELECTRIC PROPERTIES OF MATERIALS</p> <p>Magnetic properties : Magnetic induction – Magnetic field strength- Magnetic permeability –Magnetization – Magnetic Susceptibility - Origin of magnetic moment – Classification of Magnetic materials –Properties of Dia, Para, Ferro, Anti ferro and ferri-magnetic materials– Hysteresis curve, soft and hard magnetic materials.</p> <p>Dielectric properties: Dipole – Dielectric constant – polarization-Displacement vector-Electronic, ionic,and orientational polarization – internal fields – Clausius – Mossotti equation – Ferro electric property– Piezo electric property</p>

Text Books

1. Solid State Physics by A.J. Dekker (Mc Millan India Ltd).

2. A text book of Engineering Physics by M.N. Avadhanulu & P.G. Kshirasagar (S. Chand publications)
3. Engineering Physics by M.R. Srinivasan (New Age international publishers)

References

1. Introduction to solid state physics by Charles Kittel (Wiley India Pvt.Ltd)
2. Applied Physics by T. Bhimasenkaram (BSP BH Publications)
3. Applied Physics by M.Arumugam (Anuradha Agencies)
4. Engineering Physics by Palanisamy (Scitech Publishers)
5. Engineering Physics by D.K.Bhattacharya (Oxford University press)
6. Engineering Physics by Mani Naidu S (Pearson Publications)
7. Engineering Physics by Sanjay D Jain and Girish G Sahasrabudhe (University Press)
8. Engineering Physics by B.K.Pandey & S. Chaturvedi (Cengage Learning)
9. Physics Volume-2 by Resnick, Halliday & Walker (John Wiley & sons, inc.

Name of the Subject: **Programming with C**
 (Common to ECE,EEE, ME)
 Regulation year : **2015-16**

Subject Code : **UGCS1T01**
 Year / Semester : **I / I**
 Theory : **3 hrs**
 Credits : **3**

Course Objective:

- To give an insight on basics of programming environment and C- programming fundamentals to develop programs.

Course Outcomes:

After completion of this course, the students will be able to

- CO 1.** Understand and implement software development tools like algorithm, pseudo codes and also the basic programming constructs required to write simple C programs
- CO 2.** Understand the control structures (if, if/else, switch, while, do/while, for) and use of derived data types(arrays)
- CO 3.** Study the concept of modular programming with functions
- CO 4.** Understand and apply pointers in run time memory allocation
- CO 5.** Master the user defined data types using Structures and Unions
- CO 6.** Understand the concept of file management

Syllabus:

UNIT	TOPICS
I	<p>Objective: Notion of Operation of a CPU, Notion of an algorithm and computational procedure, editing and executing programs.</p> <p>Introduction: Computer systems, Hardware and Software Concepts,</p> <p>Problem Solving: Algorithm / Pseudo code, flowchart, program development steps, computer languages: machine, symbolic and high-level languages, Creating and Running Programs.</p> <p>BASICS of C Programming: Structure of a C program, identifiers, data types and sizes. Constants, Variables, Operators, type conversion & casting, Expression evaluation.</p>
II	<p>Objective: understanding branching, iteration and data representation using arrays</p> <p>SELECTION: if-else, nested if, Multi-way selection: switch.</p> <p>ITERATIVE: loops - while, do-while and for statements, break, continue, Looping applications: Summation, powers, smallest and largest.</p> <p>ARRAYS: Arrays- concepts, declaration, definition, accessing elements, storing elements, 1-D arrays, 2-D arrays & multidimensional arrays, array applications, Strings and String functions.</p>
III	<p>Objective: Modular programming and recursive solution formulation</p> <p>FUNCTIONS- MODULAR PROGRAMMING: functions, basics, categories, parameter passing, storage classes, user defined functions, standard library functions, recursive functions, header files, C Preprocessor directives, Passing arrays to functions.</p>
IV	<p>Objective: Understanding pointers and dynamic memory allocation</p> <p>POINTERS: pointers- concepts, initialization of pointer variables, pointers and function arguments, passing by address-dangling memory, address arithmetic, character pointers and functions, pointers to pointers, pointers and arrays, dynamic memory management functions, command line arguments.</p>

V	Objective: Understanding miscellaneous aspects of C ENUMERATED, STRUCTURE AND UNION TYPES: Derived types- structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, unions, typedef, bit-fields.
VI	Objective: Comprehension of file operations FILEHANDLING: Input and output- concept of a file, text files and binary files, Formatted I/O, File I/O operations, random files.

Text Books

1. Let Us C- Yashavant Kanetkar.
2. Programming in C, Reema Thareja, OXFORD
3. The C programming Language by Dennis Richie and Brian Kernighan
4. Programming in C, Second Edition by Ashok N.Kamthane, Pearson
5. Programming in C, A practical approach Ajay Mittal PEARSON

References

1. Programming in ANSI C, Dr. E. Balaguruswamy, Tata McGraw-Hill Education
2. Problem Solving and Program Design in C, Hanly, Koffman, 7th ed, PERSON
3. C Programming, A Problem Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

Name of the Subject: **Environmental Science**
 (Common to ECE, EEE, ME)
 Regulation year : **2015-16**

Subject Code : **UGBS1T06**
 Year / Semester : **I / I**
 Theory : **3 hrs**
 Credits : **3**

Course Objectives:

- To educate students about environment, and its degradation.
- To acquire awareness, sensitivity about biodiversity and understanding associated problems.
- To provide knowledge to solve environmental problems.

Course Outcomes:

After completion of this course, the students would be able to

- CO 1.** To create awareness towards environmental problems.
- CO 2.** To sensitize the students towards eco-friendly practices for the sustainable development.
- CO 3.** To encourage the students to participate in environmental protection activities.

Syllabus:

UNIT	TOPICS
I	<p>Multidisciplinary nature of Environmental Studies: Definition, Scope, Importance and sustainability – People, institutions in the environment</p> <p>Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. – Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.</p>
II	<p>Natural Resources: Natural resources and associated problems; Forest resources – Use and over – exploitation, deforestation – Timber extraction; Water resources & Conservation – Use and over utilization of surface and ground water- dams – benefits and problems</p> <p>Mineral resources- Use and exploitation, environmental effects- Mining; Food resources- World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity; Energy resources- Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources; Land resources- Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.</p>
III	<p>Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: <i>In situ</i> conservation, <i>Ex situ</i> conservation.</p>
IV	<p>Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution,</p>

	<p>Noise pollution, nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies. Global Environmental Challenges: Stockholm and Rio Summit: Global warming and climate change, acid rains, ozone layer depletion</p> <p>Solid Waste Management: Sources, classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products.</p>
V	<p>Social Issues and the Environment:</p> <p>Urban problems related to energy -Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. population growth and explosion, effects. Role of information Technology in Environment and human health. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness</p>
VI	<p>Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism.</p> <p>Green Chemistry: Introduction & Principles.</p> <p>The student should submit a report individually on any issues of Environmental Studies course and make a power point presentation.</p>

Text Books

1. Environmental Studies by R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
2. A Textbook of Environmental Studies by Shaashi Chawla, TMH, New Delhi.
3. Environmental Studies by P.N. Palaniswamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai.

References

1. Text Book of Environmental Studies by Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. Environmental Studies by K.V.S.G. Murali Krishna, VGS Publishers, Vijayawada.
3. Environmental Studies by Benny Joseph, Tata McGraw Hill Co, New Delhi.
4. Environmental Studies by Piyush Malaviya, Pratibha Singh, Anoop Singh: Acme Learning, New Delhi.

Name of the Subject: **English Communication Skills Lab-I**
(Common to all Branches)
Regulation year : **2015-16**

Subject Code : **UGBS1P07**
Year / Semester : **I / I**
Practical : **3 hrs**
Credits : **1**

Course Objectives:

- To expose students to different expressions and usages of English
- To inculcate the basic skills of communication in English language.
- To enable the students to acquire right pronunciation of English words.

Course Outcomes:

After the completion of this course, the student will be able

- CO 1.** To acquaint students the sounds and symbols of English
- CO 2.** To create awareness on usage of English in appropriate situations
- CO 3.** To familiarize students to the accent and rhythm of native speakers of English
- CO 4.** To encourage students to speak fluently and accurately in English

Syllabus

UNIT	TOPICS
I	A: Greeting, introducing and taking leave B: Pure vowels, diphthongs
II	A: Giving information and asking for information B: Consonants
III	A: Inviting, accepting and declining invitations B: Accent & Intonation
IV	A: Commands, requests, suggestions and opinions B: BBClearnenglish.com
V	JAM SESSION A: Resources from www.talkenglish.com B: Resource from BBC Flatmates

PRESCRIBED MANUAL:

1. Strengthen Your Communication Skills, Maruthi Publications

Name of the Subject: **ENGINEERING PHYSICS LAB**
(Common to ECE, EEE, ME)
Regulation year : **2015-16**

Subject Code : **UGBS1P08**
Year / Semester : **I / I**
Practical : **3 hrs**
Credits : **1**

Course Objectives:

- To familiarize with the phenomena of waves.
- To strengthen students to understand physical concepts of nature in a better way.
- To enhance analytical thinking and to improve to problem solving techniques

Course Outcomes:

After the completion of this course, the student will be able

CO 1. Get the clear knowledge on different kinds of waves.

CO 2. Have a scientific knowledge on the physical concepts of nature

CO 3. Able to have analytical knowledge and problem solving techniques in understanding scientific applications

List of Experiments:

Any eight of the following can be done

- 1 Determine of Rigidity modulus of a material –Torsional pendulum.
- 2 Melde's experiment –Transverse and Longitudinal modes.
- 3 Verification of laws of vibrations in stretched strings – Sonometer.
- 4 Determination of thickness of a thin object using parallel interference fringes.
- 5 Magnetic field along the axis of a current carrying coil – Stewart and Gee's apparatus.
- 6 I/V characteristics of Zener diode.
- 7 Energy Band gap of a Semiconductor p - n junction.
- 8 Newton's rings – Radius of Curvature of plano –Convex Lens.
- 9 L-C-R Series Resonance Circuit.
- 10 Determine the Planck's constant using photo-cell.
- 11 Determination of single slit diffraction using Lasers.
- 12 Determination of velocity of Sound – Volume resonator.

Name of the Subject: **C Programming Lab**
(Common to ECE, EEE, ME)
Regulation year : **2015-16**

Subject Code : **UGCS1P02**
Year / Semester : **I / I**
Practical : **3 hrs**
Credits : **1**

Course Objectives:

- To give an insight on basics of programming environment and C- programming fundamentals to develop programs

Course Outcomes:

- CO 1.** After the completion of this course, the student will be able
- CO 2.** Demonstration of programs using input output functions
- CO 3.** Implementation of programs decision making statements
- CO 4.** Implementation of applications using iterative statement
- CO 5.** Implementation of program modularization using functions
- CO 6.** Develop programs using arrays, pointers and structures

Write programs using files

Exercise 1 Write a program that will output your name and address using a separate printf() statement for each line of output.

1. Modify your solution for the previous program so that it produces all the output using only one printf() statement.
2. Write a program to output the following text exactly as it appears here:
" C is just like sea....." she said.
3. Write a program that prompts the user to enter a distance in inches and then outputs that distance in yards, feet, and inches.
4. Write a program to convert the temperature from degree centigrade to Fahrenheit and vice versa.
5. Write a C program to find the largest of three numbers using ternary operator.
6. Write a C Program to swap two numbers without using a temporary variable

Exercise 2

1. Write a program that reads an integer and checks whether it is even or odd.
2. Write a program that reads three edges for a triangle and determines whether the input is valid. The input is valid if the sum of any two edges is greater than the third edge.
3. Write a C program to find the roots of a quadratic equation.
4. Write a program that prompts the user to enter an integer and determines whether it is divisible by 5 and 6, whether it is divisible by 5 or 6, and whether it is divisible by 5 or 6, but not both. For example, if your input is 10, the output should be
Is 10 divisible by 5 and 6? False
Is 10 divisible by 5 or 6? True
Is 10 divisible by 5 or 6, but not both? True

- Write a program that will compute the electric bill of a person given the following ranges:

Range	Cost
1 – 99 kilowatts	Rs.1.50/kilowatt
100-249 kilowatt	Rs. 2.50/kilowatt after the first 99 kilowatt hours
250 or more	Rs 5 / kilowatt every kilowatt hour succeeding
- Write a C program, which takes two integer operands and one operator form the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)

Exercise 3

- Write a C program to find the sum of individual digits of a positive integer and find the reverse of the given number.
- Write a program that displays all the numbers from X to Y, that are divisible by a and b.(X,Y,a and b should be read from the key board)
- Write a program that reads an unspecified number of integers, determines how many positive and negative values have been read, and computes the total and average of the input values, not counting zeros. Your program ends with the input 0. Display the average as a floating-point number. (For example, if you entered 1, 2, and 0, the average should be 1.5.)
- Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
- A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
- Write a C program to find the factorial of a given number.

Exercise 4

- Write a C Program to print the multiplication table of a given number n up to a given value, where n is entered by the user.
- Write a C Program to enter a decimal number, and calculate and display the binary equivalent of that number
- C Program to check whether the given number is Armstrong number or not.
- Write programs for the following

$$1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n}$$

$$\frac{1}{3} + \frac{3}{5} + \frac{5}{7} + \frac{7}{9} + \frac{9}{11} + \frac{11}{13} + \dots + \frac{95}{97} + \frac{97}{99}$$

- Write programs for the following
 - ```

1
2 2
3 3 3

```
  - ```

*****
****
***
**
*
```

Exercise 5

1. Write a program that reads "n" numbers, computes their average, and finds out how many numbers are above the average.
2. Write a C program to interchange the largest and smallest numbers in the array.
3. Write a C program to implement a linear search

Exercise 6

1. Write a C program to implement sorting of an array of elements
2. Write a program that reads in ten numbers and displays distinct numbers (i.e., if a number appears multiple times, it is displayed only once).
3. Write a C program to input two $m \times n$ matrices, check the compatibility and perform addition and multiplication of them

Exercise 7

1. Write a C program to implement the following
 - a. To insert a sub-string in to given main string from a given position.
 - b. To delete n Characters from a given position in a given string.
 - c. To replace a character of string either from beginning or ending or at a specified location.
2. Implement the following functions without using built-in C functions
 - To concatenate two strings
 - To test whether the two given strings are equal or not
 - To find the length of a string
 - To find whether a given string is palindrome or not

Exercise 8

1. Write a C function that takes two integers as arguments and returns the value of the larger one.
2. Write a C functions to find both the largest and smallest number of an array of integers.
3. Write C programs that use both recursive and non-recursive functions for the following
 - a. factorial of a given integer.
 - b. GCD of two given integers.

Exercise 9

1. Write a C Program to compare two strings using pointers
2. Write a C program to swap two numbers using pointers
3. Implement the following functions
 - a. malloc()
 - b. calloc()

Exercise 10

Examples which explores the use of structures, union and other user defined variables

Exercise 11

1. Write a C program which copies one file to another
2. Write a C program to count the number of characters and number of lines in a file.

3. Write a C Program to merge two files into a third file. The names of the files must be entered using command line arguments.
4. Write a C program that copies the characters from position X to position Y from one file to another file.

**I Year II-Semester Syllabus Department of Electronics and
Communication Engineering
(R14(R) Regulation)**

Name of the Subject **ENGLISH-II**
(Common to all Branches)
Regulation year : **2015-16**

Subject Code : **UGBS2T01**
Year / Semester : **I / II**
Theory : **3 hrs**
Credits : **3**

Course Objectives:

- To train students in all LSRW Skills in order to make them independent lifelong learners by availing of these four skills.
- To prepare students to face the emerging challenges of the world.
- To inculcate the habit of reading beyond academics among students and enabling them to be competent communicators on various platforms.
- To expose students to different cultural contexts

Course Outcomes:

After the completion of this course, the student will be able

- CO 1.** Learning to understand the correct use of technology for human progress
- CO 2.** Learn to understand the mindset of the young and the old.
- CO 3.** To be aware of the importance of water in our lives.
- CO 4.** Learn to realize true nature of work and its spiritual significance.
- CO 5.** Learn to write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide range vocabulary, organizing the ideas logically on a topic.
- CO 6.** Learn to communicate formally by means of letter, Report and E-mail.

Syllabus:

UNIT-1	
Lesson:	TECHNOLOGY WITH A HUMAN FACE:E.F. SCHUMACHER
Vocabulary	Homophones, Homonyms, Homographs-meaning and usage
speaking	Extempore
Writing	Email writing, letter writing, Business letters.

UNIT-2	
Lesson:	THE BOY COMES HOME: A.A. MILNE
Vocabulary	One word substitutes
Writing	Preparing a Resume/Curriculum vitae
Reading	Finding key information in a given text.

UNIT-3	
Lesson:	WATER, THE ELIXIR OF LIFE:C.V. RAMAN
Vocabulary	Prefixes and suffixes
Writing	Report writing-Official Reports ,Technical Reports
Listening	Listen to a story and retelling it

Assignment: I Each student has to read a book of her interest (Novel, Short stories, Academic, Literary technical) and submit the content of the book in the form of a report/essay and has to give the overview the book by means of an oral presentation of 15 min. duration in the class before the completion of MID-examination. It is mandatory for all the students.

❖ It is only for Internal Assessment

UNIT-IV	
Lesson:	THE SECRET OF WORK: SWAMI VIVEKANANDA
Vocabulary	Idioms-meaning and usage
Writing	Essay writing
Speaking	Interactive exercises

UNIT-V	
Lesson:	LONDON: Wordsworth
Grammar	Phrasal verbs-meaning and usage
Writing	précis writing
spelling	Commonly mis-spelt words

UNIT-VI		
Lesson:	Three Questions: Leo Tolstoy	
Grammar	Spotting errors	
Creative writing and speaking	Conduct a field work and give the details in the class Picture analysis, Analyzing a work of art, Poster presentation, E-mail messaging ,SMS messaging, Preparing a special day messages, News headlines, Preparing an invitation, Developing a story using clues , Caption writing, Creating an advertisement	Questions will not be asked from this chapter in the examination

Assignment: II Each student has to read a book of her interest (Novel, Short stories, Academic, Literary technical) and submit the content of the book in the form of a report/essay and has to give the overview the book by means of an oral presentation of 15 min. duration in the class before the completion of MID-II examination. It is mandatory for all the students.

❖ It is only for Internal Assessment

Text Books

1. Sure Outcomes: English for Engineers and Technologists; Orient Blackswan publications

References

- 1.Martin Hewings:Advanced English Grammar
- 2.Rizvi, Ashraf. M. Effective Technical Communication. Tata McGraw-Hill, New Delhi.2005
- 3.A.V Martin & A.J. Thompson: A Practive Grammar & Usage
- 4.NormanLewis: Word Power Made Easy
5. Oxford Practice Grammar:John Eastwood

Name of the Subject: **Engineering Mathematics-III**
 (Common to all branches)
 Regulation year : **2015-16**

Subject Code : **UGBS2T03**
 Year / Semester : **I / II**
 Theory : **3+2 hrs**
 Credits : **4**

Course Objectives:

- To assist the students in employing various techniques and methods of mathematics to model and solve real time engineering problems.

Course Outcomes:

After completion of the course the student will be able to

- CO 1.** Apply matrix techniques to system of linear equations.
- CO 2.** Model and solve real time engineering problems using Eigen values and Eigen vectors.
- CO 3.** Evaluate multiple integrals.
- CO 4.** Simplify a vector equation of a physical system using vector identities
- CO 5.** Evaluate vector integrals.

Syllabus:

UNIT	TOPICS
I	LINEAR SYSTEMS OF EQUATIONS Rank-Echelon form, Normal form – Solution of Linear Systems – Direct Methods- Gauss Elimination - Gauss Jordon and Gauss Seidel Methods.
II	EIGEN VALUES - EIGEN VECTORS AND QUADRATIC FORMS Eigen values - Eigen vectors– Properties – Cayley-Hamilton Theorem[without proof] – Inverse and power of a matrix by using Cayley-Hamilton theorem- Quadratic forms- Reduction of quadratic form to canonical form – Rank - index – signature-nature.
III	MULTIPLE INTEGRALS Basic concepts of Curve tracing (Cartesian – Parametric-polar curves)- Multiple integrals - double and triple integrals – change of variables – Change of order of Integration
IV	VECTOR DIFFERENTIATION Gradient- Divergence- Curl - Physical Interpretation and examples– Vector operators – Vector identities.
V	VECTOR INTEGRATION Line integral – Potential function –surface and volume integrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and related problems
VI	APPLICATIONS OF ENGINEERING MATHEMATICS-III Finding the current in an electrical circuit - Free vibration of a two-mass system – Applications of Integration to Lengths, Volumes and Surface areas of revolution –Areas of regions, Volumes of Solids - Moments of inertia, Work done by Force.

Text books

1. B.S.GREWAL, Higher Engineering Mathematics, 42nd Edition, Khanna Publishers
2. B.V. RAMANA, Higher Engineering Mathematics, Tata McGrawhill
3. ERWIN KREYSZIG, Advanced Engineering Mathematics, 9th Edition

References

1. GREENBERG, Advanced Engineering Mathematics, 9th edition
2. PETER O'NEIL, Advanced Engineering Mathematics, Cengage Learning
3. D.W. JORDAN AND T. SMITH, Mathematical Techniques, Oxford University Press.

Name of the Subject: **Engineering chemistry**
 (Common to ECE, EEE, ME)
 Regulation year : **2015-16**

Subject Code : **UGBS2T05**
 Year / Semester : **I / II**
 Theory : **3 hrs**
 Credits : **3**

Course Objectives:

- To provide basic building blocks of Engineering by coverage of Fundamental Chemistry Topics.
- To Provide Information on exciting new materials now available in Engineering.
- Technical growth that could motivate a new generation of Engineers.

Course Outcomes:

After the completion of this course, the student will be able

- CO 1.** Exposure of the student to clean water technology.
- CO 2.** To Provide Knowledge about concepts of electrochemistry & Fuel cells.
- CO 3.** To enlighten the young engineers to know about types of corrosion & control methods.
- CO 4.** To understand the properties of polymers in order to prepare advanced plastics & elastomers.
- CO 5.** Exposure of the student to analyze various types of fuels & their applications.
- CO 6.** To give a brief idea about advanced materials & their applications.

Syllabus:

UNIT	TOPICS
I	WATER TECHNOLOGY Hard Water – Estimation of hardness by EDTA method – Potable water- Sterilization and Disinfection – Boiler feed water – Boiler troubles – Priming and foaming , scale formation, corrosion, caustic Embrittlement, turbine deposits – Softening of water – Lime soda, Zeolite processes – Reverse osmosis – Electro Dialysis, Ion exchange process
II	ELECTRO CHEMISTRY Introduction, Conductometric titrations – Galvanic cells – Electrode potentials Electrochemical series, batteries and fuel cells; Types of standard electrodes –hydrogen electrodes ,calomel electrode,Ion selective electrode,glass electrode Introduction to sensors, bio sensors and their applications,
III	CORROSION & IT'S CONTROL Causes and effects of corrosion – theories of corrosion (dry, chemical and electrochemical corrosion) –Factors affecting corrosion – Corrosion control methods – Cathode protection –Sacrificial Anodic, Impressed current methods Surface coatings – Methods of application on metals (Hot dipping, Galvanizing, tinning , Cladding, Electroplating, Electro less plating –copper on printed electrical circuit board
IV	CHEMISTRY OF POLYMERS Types of Polymerization – Stereo Polymers – Physical and Mechanical properties of polymers. Plastics – Thermoplastics and thermo setting plastics – Compounding and Fabrication of plastics – Preparation and properties of Polyethylene, PVC and Bakelite -Fiber reinforced plastics – Biodegradable polymers – Conducting polymers. Elastomers – Rubber and Vulcanization – Synthetic rubbers – Styrene butadiene rubber – Thiokol – applications.

V	<p>FUEL TECHNOLOGY</p> <p>Solid Fuels -Coal – Proximate and ultimate analysis – Numerical problems based on analysis – Calorific value – HCV and LCV, Problems based on calorific value.</p> <p>Liquid Fuels -Petroleum – Refining, Cracking, Petrol – Diesel knocking</p> <p>Gaseous fuels – Natural gas –LPG, CNG – Combustion – Problems on air requirements.</p>
VI	<p>CHEMISTRY OF ADVANCED MATERIALS</p> <p>Nano materials: Preparation, Properties & Engg. Applications of carbon Nano materials.</p> <p>Liquid Crystals (Types – Application in LCD and Engineering Applications) – Solar Cells (Solar heaters – Photo voltaic cells – Solar reflectors – Green house concepts)</p> <p>Storage devices –working of CD ,DVD,PENDRIVE</p> <p>Cement – Hardening and setting – Deterioration of cement concrete, Applications, Special Cement.</p> <p>Introduction to LED's</p>

Text Books

1. Jain and Jain (Latest Edition), Engineering Chemistry, Dhanpat Rai Publishing company Ltd,
2. N. Y. S. Murthy, V. Anuradha, K. RamaRao "A Text Book of Engineering Chemistry", Maruthi Publications
3. C.Parameswara Murthy, C.V.Agarwal, Andhra Naidu (2006) Text Book of Engineering Chemistry, B.S.Publications
4. B.Sivasankar (2010), Engineering Chemistry, McGraw-Hill company.
5. Ch.Venkata Ramana Reddy and Ramadevi (2013) , Engineering Chemistry, Cenage Learning

References

1. S.S. Dara (2013) Text Book of Engineering Chemistry, S.Chand Technical Series
2. K.Sesha Maheswaramma and Mridula Chugh (2013), Engineering Chemistry, Pearson Publications.
3. R.Gopalan, D. Venkatappayya, Sulochana Nagarajan (2011), Text Book of Engineering Chemistry, Vikas Publications.
4. B.Viswanathan and M.Aulice Scibioh (2009), Fuel Cells, Principles and application

Name of the Subject: **Professional Ethics & Human Values**
 (Common to ECE, EEE, ME)
 Regulation year : **2015-16**

Subject Code : **UGXX2T01**
 Year / Semester : **I / II**
 Theory : **3 hrs**
 Credits : **3**

Course Objectives:

- To be able to distinguish between the goals of different societies and organizations.
- To be able to distinguish between the effects of different codes of ethics.
- To be able to understand the human values.
- To familiarize students with different professional codes of ethics.
- To familiarize students with the goals and possible effects of professional codes of ethics.

Course Outcomes:

After the completion of this course, the student will be able

- CO 1.** Understand the moral issues and moral problems in engineering and how to find the solution to those problems.
- CO 2.** Get familiar for professional ethics, codes of ethics and roles, concept of safety, risk assessment.
- CO 3.** Get exposure in Environment Ethics & computer ethics; know their responsibilities and rights.
- CO 4.** Get knowledge about the moral ideals, character, policies, and relationships of people and corporations involved in technological activity.

Syllabus:

UNIT	TOPICS
I	Human Values: Morals, Values and Ethics , Self discipline, Integrity, Work Ethics – Service Learning, Civic Virtue – Respect for others, Living Peacefully, Caring – Sharing – Honesty – Courage – Value time – Co-operation – Commitment, Empathy – Self-confidence – Spirituality- Culture and Character building.
II	Engineering Ethics: The History of Ethics-Purposes for Engineering Ethics, Engineering Ethics- Consensus and Controversy, Professional and Professionalism, Professional Roles to be played by an Engineer –Self Interest, Customs and Religion-Uses of Ethical Theories-Professional Ethics-Types of Inquiry – Engineering and Ethics-Kohlber’s Theory – Gilligan’s Argument – Heinz’s Dilemma.
III	Engineering as Social Experimentation: Comparison with Standard Experiments – Knowledge gained, Conscientiousness, Relevant Information, Learning from the Past – Engineers as Managers, Consultants, and Leaders, Accountability – Role of Codes – Codes and Experimental Nature of Engineering.

IV	Engineers' Responsibility for Safety and Risk: Safety and Risk, Concept of Safety – Safety at home and community around-Types of Risks – Voluntary v/s Involuntary Risk- Short term v/s Long term Consequences- Expected Probability- Reversible Effects- Threshold Levels for Risk-Delayed v/s Immediate Risk- Safety and the Engineer – Designing for Safety – Risk-Benefit Analysis-Accidents-Green belt and animal cares
V	Engineers' Responsibilities and Rights: Collegiality-Techniques for Achieving Collegiality –Two Senses of Loyalty-obligations of Loyalty-misguided Loyalty – professionalism and Loyalty- Professional Rights –Professional Responsibilities – confidential and proprietary information-Conflict of Interest-solving conflict problems – Self-interest, Customs and Religion- Ethical egoism-Collective bargaining-Confidentiality-Acceptance of Bribes/Gifts-when is a Gift and a Bribe-examples of Gifts v/s Bribes-problem solving-interests in other companies-Occupational Crimes-industrial espionage-price fixing-endangering lives- Whistle Blowing-types of whistle blowing-when should it be attempted-preventing whistle blowing.
VI	Global Issues: Globalization- Cross-culture Issues-Environmental Ethics-Computer Ethics-computers as the instrument of Unethical behavior-computers as the object of Unethical Acts-autonomous computers-computer codes of Ethics-Threats and challenges for nation-Weapons Development-Ethics and Research-Analyzing Ethical Problems in Research-Intellectual Property Rights.

Text Books

1. "Engineering Ethics includes Human Values" by M.Govindarajan, S.Natarajan and V.S.SenthilKumar-PHI Learning Pvt. Ltd-2009
2. "Professional Ethics and Morals" by Prof.A.R.Aryasri, Dharanikota Suyodhana-Maruthi Publications
3. "Professional Ethics and Human Values" by A.Alavudeen, R.Kalil Rahman and M.Jayakumaran- Laxmi Publications
4. "Professional Ethics and Human Values" by Prof.D.R.Kiran-
5. "Indian Culture, Values and Professional Ethics" by PSR Murthy-BS Publication

References

1. "Ethics in Engineering" by Mike W. Martin and Roland Schinzinger – Tata McGraw-Hill– 2003.
2. "Engineering Ethics" by Harris, Pritchard and Rabins, CENGAGE Learning, India Edition, 2009.

Foundation Electives

Name of the Subject: **Basic Electrical Engineering**

Subject Code : **UGEE2T01**

Regulation year : **2015-16**

Year / Semester : **I / II**

Theory : **3 hrs**

Credits : **3**

Course Objectives

- Introduce fundamental concepts in Materials and how they are used
- Introduce Ohm's Law
- Introduce work, power and energy calculations
- Introduce wiring concepts

Course Outcomes:

After the completion of this course, the student will be able

- CO 1.** To know the basic electrical conducting materials and their properties.
- CO 2.** To learn the characteristics and properties of semiconductor materials and their Application as a diode and transistor.
- CO 3.** To understand different kinds of dielectric materials and their electrical and thermal effects.
- CO 4.** To acquire the knowledge on various electrical insulating materials, insulation Properties and their applications
- CO 5.** To understand the concept of work, power, energy and Joule's law.
- CO 6.** To learn types of wiring material and accessories and perform domestic wiring for a Residential building

Syllabus:

UNIT	TOPICS
I	<p>Conducting materials:</p> <p>Introduction – classification of materials , Metals and Non metals, physical, thermal, mechanical and electrical properties of materials, classification of electrical materials – concept of atom – electron configuration of atom, conductors, general properties of conductors, factors effecting resistivity of electrical materials –electrical/mechanical/thermal properties of copper, aluminum, iron, steel, lead, tin and their alloys – applications.</p>
II	<p>Semiconductors and high resistivity materials:</p> <p>Introduction – semiconductor materials – characteristics of semiconductors – atomic structure of Intrinsic and extrinsic semi conductors – preparation of semiconductors –Germanium and silicon – doping materials P-type and N-type materials – Diode and transistor, their application High Resistivity materials – electrical / thermal / mechanical properties of Manganin, Constantan, Nichrome, Tungsten, Carbon and Graphite and their applications in electrical equipment.</p>
III	<p>Dielectric materials :</p> <p>Introduction – solid, liquid and gaseous dielectrics, leakage current, permittivity, dielectric constant, dielectric loss – loss angle – loss constant, Breakdown voltage and dielectric strength of solid, liquid and gaseous dielectrics, effect of break down– electrical and thermal effects</p>

	,Polarization – electric, ionic and dipolar polarization. Effect of temperature and Frequency on dielectric constant of polar dielectrics.
IV	Insulating Materials: Introduction – characteristics of a good electrical insulating materials – classification of insulating materials – electrical, thermal, chemical and mechanical properties of solid insulating materials, electrical, thermal and mechanical properties of, Asbestos, Bakelite, rubber, plastics, thermo plastics. Resins, polystyrene, PVC, porcelain, glass, cotton and paper. Liquid insulating materials – Mineral oils, synthetic liquids, fluorinated liquids – their Electrical, thermal and chemical properties – transformer oil – properties – effect of moisture on insulation properties Gaseous insulators – classification based on dielectric strength – dielectric loss, chemical stability properties and their applications .
V	Work, Power and Energy: Ohm’s Law – work power, energy - affects of electric currents – Joule’s law of electric heating – thermal efficiency –SI units-Calculation of Kilo-watt Power (simple problems)
VI	DOMESTIC WIRING: Wiring materials and accessories – Types of wiring – Types of Switches – Specification of Wiring – Stair case wiring - Fluorescent lamp wiring-Godown wiring – Basics of Earthing – single phase wiring layout for a residential building.

Text Books

1. “Electrical engineering materials” by G.K. Mittal, Khanna publication 2nd edition.
2. “A course in Electrical Engineering Materials” by R.K .RAJPUT, Laxmi publications.
3. “Electrical technology volume-I” by B.L. Theraja, SChand publications.

References

1. “An Introduction to electrical engineering materials” by C.S. Indulkar and S. Thiruvengadam, SChand & Company.
2. "Electrical engineering Materials" by T.T.T.I, Madras, Tata McGraw Hill
3. “A course in electrical engineering materials" by S.P. Seth, Dhanapatrai & Sons, New Delhi

Name of the Subject: **Basic Electronics Engineering**

Subject Code : **UGEC2T01**

Regulation year : **2015-16**

Year / Semester : **I / II**

Theory : **3 hrs**

Credits : **3**

Course Objectives:

- The objective of this course is to introduce the students about the fundamental concepts of semi conductor diodes, Transistor and their applications. At the end of the course, the students are expected to know about the operation of the semi conductor devices.

Course Outcomes:

Upon completion of the course, students will be able to

- CO 1.** Understand the concepts of various materials used in electronic devices.
- CO 2.** Analyze and design rectifier and filter circuits and measure their parameters.
- CO 3.** Set the Q point and operate Transistor as an amplifier using small signal model.
- CO 4.** Analyze the operation of oscillator circuits.

Syllabus:

UNIT	TOPICS
I	INTRODUCTION TO ELECTRONICS and SEMICONDUCTORS PHYSICS : What is Electronics, Application of electronics, Modern Trends in electronics. Structure of atom, metals, insulators, semiconductor, energy band theory of solids, effect of temperature on semi conductor, hole current. Intrinsic, extrinsic semi conductors, majority, minority charge carriers in n-type, p-type semiconductors.
II	SEMICONDUCTOR DEVICES : Formation and Terminal characteristics of PN Junction Diode and its Operation. Breakdown Mechanisms-Avalanche and Zener breakdown. SPECIAL DIODES: Zener Diodes, Zener Diodes as Regulator. LED, Photo Diode, Tunnel Diode, Varactor Diode
III	DIODE CIRCUITS: Diode as a Rectifier, Half wave Rectifier, Full wave Rectifier, Ripple factor, Form factor, peak factor, Efficiency of Rectifiers. Filters – Capacitor, Inductor, LC and CLC filters, Comparison of filters. Clipping and Clamping Circuits.

IV	<p>BIPOLAR JUNCTION TRANSISTOR Bipolar Junction Transistors: Device Structure (PNP,NPN) and Physical Operation, V – I Characteristics in three configuration (CB,CE,CC), The BJT as a Switch. Operating point of a transistor.</p> <p>FIELD-EFFECT TRANSISTORS Types of Field-Effect Transistors, Principle and working of JFET, Device Structure and schematic symbol. V-I Characteristics, Difference between JFET and BJT. MOSFET- types of MOSFET-The Depletion-Type MOSFET, The Enhancement-Type MOSFET, Device Structure and schematic symbol. V- I Characteristics,</p>
VI	<p>SMALL-SIGNAL AMPLIFIERS Transistor biasing and stabilization, Basic transistor as an amplifier, classification of amplifiers based on coupling. Power amplifiers- need, difference between voltage and power amplifier, push-pull amplifier. Types of feedbacks in amplifiers.</p>
VI	<p>UNIT VI OSCILLATORS Need of oscillator, generation of sine wave using tuned circuits, positive feedback amplifier as an oscillator, Barkhausen criterion. Classification of oscillators-LC Oscillator, RC Oscillator, Crystal Oscillator.</p>

Text Books

- T1.** Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, Pearson/Prentice Hall,9thEdition,2006
- T2.** Basic Electronics and Linear Circuits_N. N. Bhargava, D. C. Kulshreshtha And S. C. Gupta . Tata McGraw - Hill Education, 1st edition,2008

References

- R1.** Integrated Electronics – Jacob Millman, Chritos C. Halkies,, Tata Mc-Graw Hill, 2009
- R2.** Principles of Electronics- V.K. Mehata, Rohith Mehatha, S.Chand

Name of the Subject: **Basic Mechanical Engineering**

Subject Code : **UGME2T02**

Regulation year : **2015-16**

Year / Semester : **I / II**

Theory : **3 hrs**

Credits : **3**

Course Objectives:

- Understand the fundamental concepts of the Mechanical Engineering
- Name different power plants and describe their function.
- Classify I.C. Engines, identify the parts of engine, and determine the efficiency of petrol and diesel engines.
- Understand the basic manufacturing methods.
- Understand power transmission in mechanical engineering.

Course Outcomes:

Upon completion of the course, students will be able to

CO 1. Understand the basic concepts of Mechanical Engineering.

CO 2. Understand the different sources of energy and power.

CO 3. Understand the concepts of I.C. Engines, identify the parts of engine, and determine the efficiency of petrol and diesel engines.

CO 4. Understand the basic manufacturing methods of power transmissions in mechanical engineering

SYLLABUS:

UNIT	TOPICS
I	INTRODUCTION : Force, mass, Pressure, Work, Power, Energy, Heat, Temperature, Units of heat, Specific heat capacity, Interchange of heat, Change of state, Mechanical equivalent of heat, Internal energy. Mechanical properties: Strength, Hardness, Toughness, Ductility, Malleability, Creep. FUELS AND COMBUSTION: Introduction, Classification, Solid fuels, Liquid Fuels, Gaseous fuels, LPG, CNG and bio-fuels, Calorific values.
II	SOURCES OF ENERGY: Fossil fuels, Hydro Power, Solar energy, wind energy, Geo-thermal Energy, Tidal Energy, Ocean thermal Energy and Nuclear Energy.
III	STEAM TURBINES : Classification, Principle of operation of Impulse and reaction turbines. GAS TURBINES: Classification, Working principles and Operations of Open cycle and closed cycle gas turbines. WATER TURBINES- Classification, Principles and operations of Pelton wheel, Francis turbine and Kaplan turbine.
IV	INTERNAL COMBUSTION ENGINES: Classification, 2 Stroke and 4 stroke Petrol engines & Diesel engines. P-V diagrams of Otto and Diesel cycles. Problems on indicated power, brake power, indicated thermal efficiency, brake thermal efficiency, mechanical efficiency, and specific fuel consumption.
V	MANUFACTURING PROCESSES: Introduction, Types, Metal Casting processes- casting terms, advantages, limitations and applications, Metal forming Processes- Hot working and Cold working-advantages and disadvantages, Fabrication Processes- classification and general considerations, Machining Processes –types.

VI	<p>TRANSMISSION OF MOTION AND POWER: Introduction, Methods of drive, Power transmission elements, shaft and axle, Belt-drive, Pulleys, Power transmitted by a Belt drive, Chain drive and Gear drive.</p> <p>Belt Drives :- Introduction , Types , Length of open belt drive and cross belt drive , velocity ratio and difference between Open belt drive and cross belt drive , power transmitted by belt.</p>
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Text Books

1. Elements of Mechanical Engineering, Manglik V.K, PHI Publications, 2013.
2. Elements of Mechanical Engineering-K.P.Roy, S.K.Hajra Choudhury, Nirjhar Roy,Media Promoters & Publishers Pvt Ltd,Mumbai,7th Edition,2012.
3. A text Book of Elements of Mechanical Engineering – K R Gopalkrishna, Subhash Publishers, Bangalore.
4. Mechanical Engineering science – Ravi, V.K.Publishers

References

1. A Text Book of Elements of Mechanical Engineering – S. Trymbaka Murthy, 3rd Revised Edition 2006, I.K. International Publishing House Pvt Ltd, New Delhi.
2. Basic Mechanical Engineering-Pravin Kumar,2013 Edition,Pearson
3. Basic Mechanical Engineering, by T S Rajan, Wiley Eastern Ltd., New Age International Ltd.(1993)
4. Fundamental of Mechanical Engineering by G.S. Sawhney, Prentice Hall of India Publication New Delhi
5. Thermal Engineering by R.K. Rajput ,S.Chand Publication New Delhi
6. Manufacturing Technology by P N Rao, Tat McGraw Hill

Name of the Subject: **Basic Civil Engineering**

Subject Code : **UGCE2T01**

Regulation year : **2015-16**

Year / Semester : **I / II**

Theory : **3 hrs**

Credits : **3**

Course Objectives:

- To provide the students with basic knowledge of different fields of civil engineering and various materials used for construction.
- Ability to identify various components of common civil engineering structures and projects.
- To get motivated and appreciate the importance and need of civil engineering.

Course Outcomes:

Upon completion of the course, students will be able to

CO 1. Students are able to get an overview of Civil Engineering.

CO 2. Student shall able to identify and appreciate the necessity of engineered construction.

CO 3. Student shall able to understand the principles and applications of science in Surveying.

CO 4. Student are able to understand and apply the knowledge form multidisciplinary perspective in civil engineering.

Syllabus:

UNIT	TOPICS
I	BUILDING MATERILAS Introduction– Civil Engineering – Materials: Bricks – composition – classifications – properties – uses. Stone – classification of rocks – quarrying – dressing – properties –uses. Timber – properties –uses –ply wood. Cement – grades –types – properties –uses. Steel – types – mild steel – medium steel – hard steel – properties – uses – market forms. Concrete – grade designation – properties – uses
II	MATERIAL PROPERTIES: Stress – strain – types – Hook’s law – three moduli of elasticity – poissons ratio – relationship – factor of safety. Centroid - center of gravity – problems in symmetrical sections only (I, T Sections). Moment of inertia, parallel, perpendicular axis theorems and radius of gyration (definitions only).
III	BUILDING COMPONENTS: Selection of site – classification – components. Foundations –functions – classifications – bearing capacity. Super Structure – Components - Flooring – requirements – selection – types – cement concrete marble – terrazzo floorings. Roof – types and requirements.
IV	SURVEYING: Objectives – classification – principles of survey - Traditional Surveying Equipments – Uses – Introduction to Total Station.
V	WATER SUPPLY AND SEWAGE DISPOSAL: Dams – purpose – selection of site – types –gravity dam (cross section only). Water supply – objective – quantity of water – sources – standards of drinking water – distribution system. Sewage – classification – technical terms – septic tank – components and functions.

VI	<p>TRANSPORTATION:</p> <p>Classification – cross section and components of road – classification of roads. Railway – cross section and components of permanent way – functions. Water way – docks and harbor – classifications – components.</p> <p>Bridge – components of bridge. Case Studies of motivating structures and achievements related to civil engineering like dams, reservoirs, tunnels, mega structures, smart cities, river bridges etc.</p>
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Text Books

1. Raju .K.V.B, Ravichandran .P.T, “Basics of Civil Engineering”, Ayyappa Publications, Chennai, 2012.
2. Rangwala .S.C, “ Engineering Material”s, Charotar Publishing House, Anand, 2012.

References

1. Ramesh Babu, “Civil Engineering”, VRB Publishers, Chennai, 2000.
2. National Building Code of India, Part V, “Building Materials”, 2005.
3. Surendra Singh, “Building Materials”, Vikas Publishing Company, New Delhi, 1996.

Name of the Subject: **Problem Solving Skills**

Subject Code : **UGCS2T03**

Regulation year : **2015-16**

Year/ Semester : **I / II**

Theory : **3 hrs**

Credits : **3**

Course Objective:

- The course provides knowledge on the basic computer architecture and problem solving techniques.

Course Outcomes:

After completion of this course, the students will be able to

- CO 1.** Understand the working of key components of a computer system, evaluation of Computers and the working of various input-output devices.
- CO 2.** Understand the working of the processor and the memory devices.
- CO 3.** Understand the representation of numbers, alphabets and other character codes in computer system
- CO 4.** Study the problem solving strategies and analyzing the algorithms
- CO 5.** Understand the logical structure of a computer program, and different constructs to develop an algorithm

Syllabus:

UNIT	TOPICS
I	Introduction to Computers: What is a Computer? Characteristics of Computers, Generations of Computers, Classification of Computers, Basic Computer Organization, Applications of Computers Input and Output Devices: Input Devices, Output Devices.
II	Computer Memory and Processors: Introduction, Memory Hierarchy, Processor Registers, Cache Memory, Primary Memory, Secondary Storage Devices, Basic Processor Architecture
III	Number Systems and Computer Codes: Binary Number System, Working with Binary Numbers, Octal Number System, Hexadecimal Number System, Working with Fractions, Signed Number Representation in Binary BCD Code, ASCII Code, Extended Binary Coded Decimal Interchange Code, Excess-3 Code, Gray Code, Unicode
IV	Introduction to Computer Problem-Solving: Introduction, The Problem-solving Aspect, Top-down Design, Implementation of Algorithms, Program Verification, The Efficiency of Algorithms, The Analysis of Algorithms
V	Fundamental Algorithms: Introduction, Exchanging the Values of Two Variables, Counting, Summation of a Set of Numbers, Factorial Computation, Sine Function Computation, Generation of the Fibonacci sequence, Reversing the Digits of an Integer, Base Conversion, Character to Number Conversion.
VI	Factoring Methods & Arrays: Introduction, Finding the Square Root of a Number, The Smallest Divisor of an Integer, The Greatest Common Divisor of Two Integers, Generating Prime Numbers, Computing the Prime Factors of an Integer. Introduction to arrays: Array Order Reversal, Array Counting or Histogramming, Finding the Maximum Number in a set, searching an element in an Array.

Text Books

1. Fundamentals of Computers, Reema Thareja, Oxford
2. How to Solve it by Computer, R.G. Dromey, PHI

References

1. How to Design Programs, Matthias Felleisen, Robert Bruce Findler, Matthew Flatt, Shriram Krishnamurthi, PHI
2. Think Like a Programmer, V.Anton Spraul, No Starch Press

Name of the Subject: **Engineering Drawing**
(Common to ECE, EEE, ME)
Regulation year : **2015-16**

Subject Code : **UGME2T01**
Year / Semester : **I / II**
Theory : **2+3 hrs**
Credits : **3**

Course Objectives:

Engineering drawing being the principle method of communication for engineers, the objective to introduce the students,

- To enable the students with various concepts like dimensioning, conventions and standards related to working drawings in order to become professionally efficient.
- To impart and inculcate proper understanding of the theory of projection.
- To improve the visualization skills.
- To visualize and represent the 3D objects in 2D planes with proper dimensioning, scaling etc.

Course Outcomes:

Upon completion of the course, students should be able to

- CO 1.** Students will be able to understand the theory of projection.
- CO 2.** Students will be able to know and understand the conventions and the methods of engineering drawing.
- CO 3.** Students will be able to draw orthographic & Isometric projections.
- CO 4.** Students will be able to improve their visualization skills so that they can apply these skills in developing new products.

Syllabus:

UNIT	TOPICS
I	<p>Objective: The objective is to introduce the use and the application of drawing instruments and to make the students construct the polygons, curves and various types of scales. The student will be able to understand the need to enlarge or reduce the size of objects in representing them and to introduce orthographic projections and to project the points and lines parallel to one plane and inclined to other.</p> <p>INTRODUCTION TO THE ENGINEERING DRAWING, Polygons, Conic sections: construction of ellipse, parabola and hyperbola by general method, Introduction to scales.</p> <p>INTRODUCTION TO ORTHOGRAPHIC PROJECTIONS: projections of points</p>
II	<p>Objective: The objective is to make the students draw the projections of the lines inclined to both the planes.</p> <p>PROJECTIONS OF STRAIGHT LINES perpendicular to one and parallel to other, parallel to both the planes, parallel to one plane and inclined to the other plane, inclined to both the planes, determination of true lengths, angle of inclinations and traces.</p>

III	<p>Objective: The objective is to make the students draw the projections of the plane inclined to both the planes.</p> <p>PROJECTIONS OF PLANES: regular planes perpendicular/parallel to one plane and inclined to the other reference plane; inclined to both the reference planes</p>
IV	<p>Objective: 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.</p> <p>PROJECTIONS OF SOLIDS – Prisms, Pyramids, Cones and Cylinders with the axis inclined to one of the planes.</p>
V	<p>Objective: The objective is to represent the object in 3D view through isometric views. The student will be able to represent the isometric views.</p> <p>ISOMETRIC PROJECTIONS</p>
VI	<p>Objective: The student will be able to represent and convert the orthographic views to isometric views and vice versa.</p> <p>Conversion of isometric views to orthographic views</p> <p>Conversion of orthographic views to isometric views</p>

Text Books

1. Engineering Drawing by N.D. Butt, Chariot Publications
2. Engineering Drawing by K.L.Narayana & P. Kannaiah, Scitech Publishers.
3. Engineering Graphics by P.I Varghese, McGrawHill Publishers
4. Engineering Drawing + AutoCad – K Venugopal, V. Prabhu Raja, New Age

References

1. Engineering Graphics for Degree by K.C. John, PHI Publishers
2. Engineering Drawing by Agarwal & Agarwal, Tata McGraw Hill Publishers
3. Engineering Drawing by M.B.Shah&B.C.Rana,Pearson Publications

LEARNING ASSESSMENT

Distribution and weightage of Marks for all Design / Drawing subjects:

The Assessment of a student's performance shall be evaluated as suggested below:

For the subject having design and / or drawing, (such as Engineering Drawing, Machine Drawing), the distribution shall be 40 marks for internal evaluation and 60 marks for end semester examination. There shall be two internal tests in a Semester and the best of the two shall be considered for the award of marks for internal tests.

1. Out of 30 internal marks, the marks shall be awarded as follows:

S.No	Assessment	Marks
1	Day to day work	20
2	internal mid examination	20

2. The external examination shall be conducted for 60 marks.
 - a) For subject like engineering drawing the pattern of external examination shall be similar to theory examination.
 - b) For subjects like Machine Drawing, external examination pattern shall be as Mentioned below:

Part-I: Should contain 3 questions out of which 2 must be answered for 20 marks.

Part-II: Assembly drawing should contain 40 marks which is compulsory.

Name of the Subject: **English Communication Skills Lab-II**
(Common to all Branches)
Regulation year : **2015-16**

Subject Code : **UGBS2P07**
Year / Semester : **I / II**
Practical : **3 hrs**
Credits : **1**

Course Objectives:

- To expose students to different employability skills and make them attain ease in their performance.
- To enable the students acquire the usage of Non-verbal communication along with verbal communication

Course Outcomes:

Upon completion of the course, students should be able to

- CO 1.** Enable students acquire better understanding of gestures and postures for effective communication.
- CO 2.** Gives hands-on experience to students to exhibit their skills in group discussion, presentations and debates.
- CO 3.** Train students for employability through interviews and telephonic interviews.

SYLLABUS:

PRESCRIBED MANUAL:

UNIT	TOPICS
I	Body language
II	Role Play: Professional situations/ contexts for role-playing in addition to the general situations
III	Presentation Skills
IV	Group Discussion
V	Interviews and Telephonic Interviews
VI	Debates (Movie clips & debates from NDTV etc.)

1. Strengthen Your Communication Skills, Maruthi Publications

Name of the Subject: **Engineering chemistry lab**
(Common to ECE, EEE, ME)
Regulation year : **2015-16**

Subject Code : **UGBS2P09**
Year / Semester : **I / II**
Practical : **3 hrs**
Credits : **1**

Course Objectives:

- To learn various analytical techniques for analyzing and solving engineering problems.
- To understand the principles associated with basics of engineering chemistry and applications of these principles in avoiding common difficulties.

Course Outcomes:

Upon completion of the course, students should be able to

- CO 1.** To impart basic knowledge of titrometric procedures in chemistry.
- CO 2.** To train the student in water sample analysis.
- CO 3.** Exposure of the student to instrumental methods

List of Experiments:

1. Introduction to chemistry laboratory – Quantitative analysis, Qualitative analysis Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations.
2. Trial experiment – Determination of HCl using standard Na_2CO_3 solution
3. Determination of Ferric iron using standard $\text{K}_2\text{Cr}_2\text{O}_7$ solution.
4. Determination of Copper by Iodometry
5. Determination of Zn using standard EDTA solution.
6. Determination of Total Hardness water using standard EDTA solution.
7. Determination of p^{H} of the soil and water samples
8. Determination of turbidity of given water sample
9. Conductometric Titrations between strong acid and strong base
10. Potentiometric Titrations between strong acid and strong base
11. Construction of an Electrochemical Cell

LIST OF EXPERIMENTS BEYOND THE SYLLABUS:

1. Preparation of Phenol – formaldehyde resin
2. Preparation of Biodiesel from the Waste vegetable oil
3. Determination of Acid number of oil

Name of the Subject: **Engineering Workshop**
 (Common to ECE, EEE, ME)
 Regulation year : **2015-16**

Subject Code : **UGME2P03**
 Year / Semester : **I / II**
 Practical : **3 hrs**
 Credits : **1**

Course Objectives:

- Workshop practice is the backbone of the real industrial environment which helps to develop and enhance relevant technical hand skills required by the technician working in the various engineering industries and workshops.
- This course intends to impart basic know-how of various hand tools and their use in different sections of manufacturing. Irrespective of branch, the use of workshop practices in day to day industrial as well domestic life helps to dissolve the problems.
- The workshop experiences would help to build the understanding of the complexity of the industrial job, along with time and skills requirements of the job. Workshop curricula build the hands on experiences which would help to learn manufacturing processes and production technology courses in successive semesters. Workshop practice is also important since only practice can make the man perfect.
- The students are advised to undergo each skill experience with remembrance, understanding and application with special emphasis on attitude of enquiry to know why and how for the various instructions and practices imparted to them in each shop.

Course Outcomes:

Upon completion of the course, students should be able to

- CO 1.** Thorough knowledge of various tools, machines, devices used in engineering practice for creating objects from material.
- CO 2.** Thorough knowledge of carrying out various operations in basic engineering shops
- CO 3.** Ability of interpretation of job drawing, application of processes and operations to produce basic components from raw material.
- CO 4.** Understand the importance of safety and health in industrial.
- CO 5.** Understand basic active and passive electronic components.
- CO 6.** Understand the electrical and electronics circuit operations and wiring.

Syllabus:

Trade	Major Learning Outcomes	Topics and Sub-topics
Introduction To Workshop	<ul style="list-style-type: none"> ➤ Sketch general workshop layout. ➤ Follow preliminary safety rules in workshop. 	<ul style="list-style-type: none"> ➤ Workshop layout. ➤ Importance of various sections/shops of workshop. ➤ Types of jobs done in each shop. ➤ General safety rules and work procedure in workshop.
Carpentry	<ul style="list-style-type: none"> ➤ Select appropriate carpentry tool for the required application. ➤ Prepare the simple job as per 	<ul style="list-style-type: none"> ➤ Types, sketch, specification, material, applications and methods of using of carpentry tools-saws, planner, chisels, hammers, pallet, marking gauge, vice,

	<p>Specification using carpentry tools.</p>	<p>try square, rule, etc.</p> <ul style="list-style-type: none"> ➤ Types of woods and their applications. Types of carpentry hardware's and their uses. ➤ Demonstration of carpentry operations such as marking, sawing, planing, chiseling, grooving, boring, joining, etc. ➤ Preparation of wooden joints like T lap joint, cross half lap joint ➤ Safety precautions.
<p style="text-align: center;">Fitting</p>	<ul style="list-style-type: none"> ➤ Select appropriate fitting Tools for the required application. ➤ Prepare the simple jobs as per specification using fitting tools. 	<ul style="list-style-type: none"> ➤ Sketch, specification and applications of fitting work holding tools-bench vise, V-block with clamp and C-clamp. ➤ Sketch, specification material, applications and ➤ methods of using fitting marking and measuring tools-marking table, surface plate, angle plate, ➤ Universal scribing block, try-square, scribe, divider, Centre punch, letter punch, calipers, Vernier caliper etc. ➤ Types, sketch, specification , material applications and methods of using of fitting cutting tools hacksaw, chisels, twist drill, taps, files, dies. ➤ Types, sketch, specification, material, applications and methods of using of fitting finishing tools-files, reamers. ➤ Sketch, specification and applications of miscellaneous tools-hammer, spanners, screw drivers sliding screw wrench. ➤ Demonstration of various fitting operations such as chipping, filing, scraping, grinding, sawing, marking, drilling, tapping. ➤ Preparation of simple and male-female joints like vee fit and square fit. ➤ Safety precautions.

<p>Tin Smithy</p>	<ul style="list-style-type: none"> ➤ Select appropriate tin smithy tool for the required application. ➤ Prepare the simple job as per specification using tin smithy tools. 	<ul style="list-style-type: none"> ➤ Concept and conversions of SWG and other gauges in use. ➤ Use of wire gauge. ➤ Types of sheet metal joints and applications. ➤ Types, sketch, specification, material, applications and methods of using tin smithy tools-hammers, stakes, scissors/snips, etc. ➤ Demonstration of various tin smithy tools and sheet metal operations such as shearing, bending and joining. ➤ Preparation of tin smithy jobs like taper tray and rectangular tray. ➤ Safety precautions.
<p>House wiring</p>	<ul style="list-style-type: none"> ➤ Fundamental knowledge of electricity and electrical safety. ➤ Select tools, wires, electrical accessories & apparatus according to the requirement 	<ul style="list-style-type: none"> ➤ Types of electrical wiring, wires, sockets. ➤ Specification of various electrical equipments and tools. ➤ Colour coding of different wires used in various wiring installations. ➤ Voltage and power ratings of the single and three phase wiring systems. ➤ Various tools and equipment used during the installations. ➤ Connection of bulbs in series and parallel, and staircase wiring. ➤ Connection of fluorescent lamp
<p>Plumbing Demonstration)</p>	<ul style="list-style-type: none"> ➤ Select appropriate pipe fitting tool for the required application. ➤ Prepare the simple job as per Specification using pipe fitting tools. 	<ul style="list-style-type: none"> ➤ Types, specification, material and applications of pipes. ➤ Types, specification, material and applications of pipe fittings. ➤ Types, specifications, material, applications and demonstration of pipe fitting tools. ➤ Demonstration of pipe fitting operations such as marking, cutting, bending, threading, assembling, dismantling, etc. ➤ Types and application of various spanners such as flat, fix, ring, box, adjustable, etc. ➤ Preparation of pipe fitting jobs like thread cutting and assembly of pipe fittings. ➤ Safety precautions.

Note: At least two exercises to be done from each trade.

Text Books

1. College workshop manual
2. Workshop manual by P. Kannaiah & K. K. Reddy
3. Elements of Workshop Technology by Hajra Chowdary
4. Workshop Practice by K.C. John