ACADEMIC REGULATIONS
(NRIA18)
COURSE STRUCTURE
AND
DETAILED SYLLABUS
(I YEAR)

COMPUTER SCIENCE ENGINEERING

For

B.Tech FOUR YEAR DEGREE COURSE
(Applicable from 2018-19 Batches)

NRI INSTITUTE OF TECHNOLOGY
An Autonomous Institution, Permanently Affiliated to JNTUK, Kakinada
(Accredited with NAAC "A" Grade and ISO 9001:2015 Certified Institution)

POTHAVARAPPADU (V), (VIA) NUNNA, AGIRIPALLI (M), PIN – 521 212

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Ref: NRIIT/Academic Calendar/B.Tech/ 2018-19   **Dt. 04.08.2018**

Revised ACADEMIC CALENDAR For I B.TECH (2018 BATCH)
Academic Year 2018 -19

I B.TECH I SEMESTER			
Description	**From**	**To**	**Weeks**
Commencement of Class Work	11-06-2018		
Induction Program	11-06-2018	30-06-2018	3 weeks
I Phase of Instructions	02-07-2018	25-08-2018	8 weeks
I Mid –Term Examinations (Subjective and Online Objective)	27-08-2018	01-09-2018	1 week
II Phase of Instructions	03-09-2018	10-11-2018	9 weeks
II Mid –Term Examinations (Subjective and Online Objective)	12-11-2018	17-11-2018	1 week
Preparation & Practicals	19-11-2018	24-11-2018	1 week
End Examinations	26-11-2018	08-12-2018	2 weeks
Class Tests			
I Class Test conducted during class hours	13-08-2018	18-08-2018	1 week
II Class Test conducted during class hours	22-10-2018	27-10-2018	1 week
Assignments			
I Assignment submission	20-08-2018	25-08-2018	1 week
II Assignment submission	05-11-2018	10-11-2018	1 week
I B.TECH II SEMESTER			
Commencement of Class Work	10-12-2018		
I Phase of Instructions	10-12-2018	09-02-2019	9 weeks
I Mid –Term Examinations (Subjective and Online Objective)	11-02-2019	16-02-2019	1 week
II Phase of Instructions	18-02-2019	13-04-2019	8 weeks
II Mid –Term Examinations (Subjective and Online Objective)	15-04-2019	20-04-2019	1 week
Preparation & Practicals	22-04-2019	27-04-2019	1 week
End Examinations	29-04-2019	11-05-2019	2 weeks
Commencement of II Year Class Work	10-06-2019		
Class Tests			
I Class Test conducted during class hours	21-01-2019	26-01-2019	1 week
II Class Test conducted during class hours	25-03-2019	30-03-2019	1 week
Assignments			
I Assignment submission	04-02-2019	09-02-2019	1 week
II Assignment submission	08-04-2019	13-04-2019	1 week

(Dr. N. Samba Siva Rao)
Controller of Examinations
CONTROLLER OF EXAMINATIONS
NRI INSTITUTE OF TECHNOLOGY
Autonomous Exam Cell
AUTONOMOUS
Departments
3. Administrative Office

(Dr. C. Naga Bhaskar)
Principal
PRINCIPAL
NRI Institute of Technology
Pothavarappadu (V), Agiripalli (M)

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

STRUCTURE FOR FIRST YEAR B.TECH PROGRAMME

I YEAR I SEMESTER

Sl. No	Course Code	Title of the Course	Scheme of Instruction (Periods Per Week)				Scheme of Examination (Maximum Marks)			No. of Credits
			L	T	P	Total	CIA	SEA	Total	
1	18A1100101	Professional English – I	2	1	-	3	40	60	100	3
2	18A1100201	Engineering Mathematics – I	2	1	-	3	40	60	100	3
3	18A1100203	Applied Physics	2	1	-	3	40	60	100	3
4	18A1105301	Programming and Problem solving with C	2	1	-	3	40	60	100	3
5	18A1103301	Engineering Graphics	1	-	2	3	40	60	100	2
6	18A1100801	Environmental Studies	2	1	-	3	40	60	100	0
7	18A1100191	English Communication Skills lab – I	-	-	3	3	40	60	100	1.5
8	18A1100292	Applied Physics lab.	-	-	2	2	40	60	100	1
9	18A1105391	Programming and Problem solving with C Lab	-	-	3	3	40	60	100	1.5
		Total	11	5	10	26	360	540	900	18

I YEAR II SEMESTER

Sl. No	Course Code	Title of the Course	Scheme of Instruction (Periods Per Week)				Scheme of Examination (Maximum Marks)			No. of Credits
			L	T	P	Total	CIA	SEA	Total	
1	18A1200101	Professional English – II	2	1	-	3	40	60	100	3
2	18A1200201	Engineering Mathematics – II	3	1	-	4	40	60	100	4
3	18A1200205	Applied Chemistry	2	1	-	3	40	60	100	3
4	18A1202301	Fundamentals of Electrical Engineering	3	-	-	3	40	60	100	3
5	18A1205401	OPPS Through JAVA	2	1	-	3	40	60	100	3
6	18A1200191	English Communication Skills lab – II	-	-	3	3	40	60	100	1.5
7	18A1200294	Applied Chemistry lab.	-	-	2	2	40	60	100	1
8	18A1205391	Automation tools & Professional Workshop	-	-	3	3	40	60	100	1.5
9	18A1205491	OPPS Through JAVA Lab	-	-	4	4	40	60	100	2
		Total	12	4	12	28	360	540	900	22

L - LECTURE   T – TUTORIAL   P - PRACTICAL
CIA – Continuous Internal Assessment   SEA – Semester End Assessment

PROFESSIONAL ENGLISH-I
(Common to CE,EEE,ME,ECE,CSE and IT)

Lecture – Tutorial: 2-1 Hours	**Internal Marks:**	40
Credits: 3	**External Marks:**	60

Prerequisites:

None

Course Objectives:

1. To strengthen the lexical ability of the students in different contexts.
2. To expose the students to various sub-skills and strategies of reading and writing – summarizing and paraphrasing.
3. To help the students develop effective writing skills through paragraph writing.
4. To train the students in fundamentals of grammar required to equip them with fluent English.
5. To enable the students to think critically by exposing them to different socio-cultural contexts through various literary texts.

Course Outcomes:

Upon successful completion of the course, the student will be able to:

CO1	Use grammar accurately in various formal and functional contexts.
CO2	Build good vocabulary and develop the ability to use in various contexts.
CO3	Comprehend, analyze and evaluate texts critically.
CO4	Develop effective reading and writing skills to enhance communicative competence.
CO5	Help the students to inculcate and apply human values and professional ethics in their academic, professional and social lives.

Contribution of Course Outcomes towards achievement of Program Outcomes

(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1										3		2
CO2										3		2
CO3						1	1					2
CO4										3		2
CO5						1	1	3				2

UNIT I

1. **Reading:** Introduction to Integrated Communication with emphasis on Reading Skills, Scanning an article from *The Economic Times* – **"Why India celebrates Engineers Day on the birth anniversary of M. Visvesvaraya"**
2. **Text:** **"I have a dream..."** - Martin Luther King
3. **Vocabulary Building:** Synonyms and Antonyms from the Text , Word Formations: Root Words, Prefixes and Suffixes
4. **Writing:** Styles of Sentence Structure for Effective Writing, Textual Exercises, Scrambled Sentences
5. **Remedial Grammar:** Parts of Speech, Effective Sentence Constructions Using Connectives

UNIT II

1. **Reading**: Skimming: **"Oh Father, Dear Father"** – Raj Kinger
2. **Text**: **"On Shaking Hands"** – A.G. Gardiner
3. **Vocabulary Building:** Synonyms and Antonyms from the Text
4. **Writing**: Paragraph Scramble
5. **Remedial Grammar:** Framing Questions and Question Tags, Punctuation Rules, Usage of Articles

UNIT III

1. **Reading**: Critical Reading: **"Dial 000"** - Barry Rosenberg
2. **Text**: **"Seeing People Off"** – Max Beerbohm
3. **Vocabulary Building**: Synonyms and Antonyms from the Text, Acronyms
4. **Writing**: Principles of a Good Paragraph
5. **Remedial Grammar**: Verbs and Types, Present Tense

UNIT IV

1. **Reading:** Note Making: **"Icons: The Lotus Temple"** – Anamika Bhutalia
2. **Text: "The Lost Child"** – Mulk Raj Anand
3. **Vocabulary Building:** Synonyms and Antonyms from the Text, One Word Substitutes
4. **Writing:** Summarising and Writing Anecdotes
5. **Remedial Grammar**: Past Tense and Future Tense, Correction of Sentences

REFERENCE BOOKS:

1. **The Blue Book of Grammar and Punctuation**, 10th Edition, Jane Straus, Josey-Bass, A Wiley Imprint.
2. **Oxford Practice Grammar,** John Eastwood, Oxford University Press.
3. **The Most Common Mistakes in English Usage** – Thomas Elliott Berry
4. **Essential Communication Skills** – Shalini Agarwal, Ane Books Pvt Ltd.
5. **Dictionary of Synonyms and Antonyms**, Oxford & IBH, III Ed
6. **A Practical English Grammar**, Agnes V. Martinet and Audrey Jean Thomson, Oxford University Press.

E-RESOURCES:

1. http://grammar.ccc.commnet.edu/grammar/index.htm
2. https://owl.english.purdue.edu/
3. https://www.britishcouncil.in/

ENGINEERING MATHEMATICS-1
((Common to CE,EEE,ME,ECE,CSE and IT)

Lecture – Tutorial:	2 – 1	**Internal Marks:**	40
Credits:	3	**External Marks:**	60

Prerequisites:
Fundamentals of Matrices, Fundamentals of Trigonometry and Calculus

Course Objectives:
- The course is designed to equip the students with the necessary skills and techniques that are essential for Engineering course.
- The skills derived from the course will help the student from a necessary base to develop analytic and design concepts.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1 To solve simultaneous linear equations, determine eigen values, eigen vectors of a matrix and determine the nature of a Quadratic forms.

CO2 To calculate a root of algebraic and transcendental equations. Explain relation between the finite difference operators and compute the interpolating polynomial for the given data. Solve Ordinary differential equations numerically using Taylor series method, Euler's and RK method of second and fourth order.

CO3 To determine the Maxima and Minima of functions of Two variables without constraints and with constraints and form the Partial Differential equations by elimination of arbitrary constants and arbitrary functions.

CO4 To solve the ordinary linear differential equations by using Laplace Transforms.

Contribution of Course Outcomes towards achievement of Program Outcomes (1– Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2		1	2						1	1
CO2	3	2		1	1						1	1
CO3	3	2		1	2						1	1
CO4	3	2		1	1						1	1

UNIT I:

Matrices
Rank – Echelon form – Normal form – PAQ form – Inverse of 4x4 matrix by Gauss-Jordan - Solution of Homogeneous linear systems – solution of Non-homogeneous linear systems – Gauss Elimination – Gauss Seidel methods.

Eigenvalues – Eigen vectors – Properties – Cayley Hamilton theorem (without proof) – Inverse Powers of Matrices by Caley Hamilton theorem – Quadratic forms – Reduction of quadratic forms to Canonical form (Congruent transformation method, Orthogonal transformation) – Rank, Index, Signature of a Quadratic form.

UNIT II

Numerical Methods

Solutions of Algebraic and Transcendental Equations: Bisection method – Iteration method – Newton Raphson method (one variable). Interpolation: Finite differences –Operators Δ, ∇, E and relations between them - Forward differences – Backward differences – Missing terms - Newton's forward and backward formulae for interpolation – Lagrange's interpolation formula.

Trapezoidal rule – Simpson's $1/3^{rd}$ and $3/8^{th}$ rules – Numerical solution of Ordinary differential equation by Taylor series method – Euler's method – Modified Euler's method – Rungekutta method of second and fourth order.

UNIT III

Partial Differentiation

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 Two variable functions – functional dependence – Jacobian – Maxima and Minima of functions of two variables without constraints and Lagrange's method of multipliers.

UNIT IV

Laplace Transforms

Laplace transforms of standard functions – shifting theorems – transforms of derivative's and integrals – Unit step function – Dirac's delta function.
Inverse laplace transforms - convolution theorem (without proof) – solving ordinary differential equations (Initial value problems) using Laplace transforms.

TEXT BOOKS:

1.**B.S.Grewal, "Higher Engineering Mathematics, Khanna Publishers",** 43rd Edition, 2014.

2.**V.Ravindranath and P.Vijayalakshmi,** Mathematical Methods, Himalaya Publishing House.

REFERENCE BOOKS:

1. **N.P.Bali,** Engineering Mathematics, Lakshmi Publications.

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

E-RESOURCES:

1.www.nptel**videos.com/mathematics/ (Math Lectures from MIT,Stanford,IIT'S)**

2.**nptel.ac.in/courses/122104017**

3.**nptel.ac.in/courses/111105035**

APPLIED PHYSICS
(Common to CSE & IT)

Lecture – Tutorial:	2-1	**Internal Marks:**	40
Credits:	3	**External Marks:**	60

Prerequisites: Knowledge of Optics & Electromagnetism

Course Objectives:

1. To provide a bridge between Basic Physics and Engineering Physics.
2. To Create the awareness of various phenomena of physics which in turn help the students in future engineering applications

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:

CO1	Impart Knowledge of Physical Optics phenomena like Interference, Diffraction and Polarization involving required to design instruments with higher resolution.
CO2	Teach Concepts of coherent sources, its realization and utility optical instrumentation. Apply the concepts of light in optical fibers, light wave communication systems, and for sensing physical parameters
CO3	Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
CO4	Understand the physics of Semiconductors and their working mechanism for their utility in sensors

Contribution of Course Outcomes towards achievement of Program Outcomes

(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3				3					3		
CO2	3	3		2	2					3		
CO3	3	3								1		
CO4	3		2		2							

UNIT I

Interference: Introduction - Interference in thin films (reflection geometry) – Newton's rings – construction and basic principle of Interferometers.

Diffraction: Introduction – Rayleigh Criterion - Resolving power of a grating, Telescope and Microscopes.

Polarization: Introduction - Types of Polarization –Double Refraction - Nicol Prism -Quarter wave plate and Half Wave plate.

UNIT-II

Lasers: Introduction - Characteristics of Laser, Absorption, spontaneous emission, Stimulated emission Lasing action, Relation between Einstein Coefficients, Population Inversion, Pumping Schemes: 3- level&4- level lasers, Pumping methods. Components of laser devices, Ruby Laser, He-Ne Laser, Applications.

Fibre Optics: Principle of optical fibre, Structure – Numerical aperture and acceptance angle,

Types of optical fibers – based on Material, refractive index profile, Modes of

propagation (Single & Multimode Fibres), Propagation of signal through optical fibre, Applications.

UNIT III

EM fields: Basic laws of electro magnetism, Maxwell's equations (Differential form only) - propagation of EM wave in dielectric medium – Poynting Vector.
Quantum Mechanics: Introduction - Matter waves – Schröedinger Time Independent and Time Dependent wave equations – Particle in a box.
Free Electron Theory: Introduction - Defects of Classical free electron theory – Quantum Free electron theory - concept of Fermi Energy – Density of States

UNIT IV

Band Theory of Solids: Bloch's theorem – Kronig – Penney model (qualitative) – energy bands in crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole.

Semi-Conductor Physics: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect.

TEXT BOOKS:
4. A text book of Engineering physics by Dr.M.N.Avadhanulu And Dr. P.G Kshir sagar,Schand &Company Ltd (2017)
5. P.K.Palanisamy, Engineering Physics, Sci Tech, Chennai
6. Engineering Physics, 2nd Edition, H.K.Malik & A.K.Singh, Mc Graw Hill Education, Chennai

REFERENCE BOOKS:
3. Solid State Physics by A.J.Dekkar, Mac Millan Publishers
4. Ajoy Ghatak, Optics, 2nd Ed., Tata McGraw Hill, 1994

E-RESOURCES:
1.NPTEL
2.www.doitpoms.ac.uk

PROGRAMMING AND PROBLEM SOLVING WITH C
(Common to CSE, IT)

Lecture – Tutorial:	2-1	**Internal Marks:**	40
Credits:	3	**External Marks:**	60

Prerequisites:
. Basic Knowledge on computer usage
.Basic knowledge on Mathematics

Course Objectives:
Formulating algorithmic solutions to problems and implementing algorithms in C.
• Notion of Operation of a CPU, Notion of an algorithm and computational procedure, editing and executing programs in Linux.
• Understanding branching, iteration and data representation using arrays.
• Modular programming and recursive solution formulation.
• Understanding pointers and dynamic memory allocation.
• Understanding miscellaneous aspects of C.
• Comprehension of file operations.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1	Understanding basic terminologies, basic idea on writing, executing programs, understanding decision structures.
CO2	Design programs involving Arrays, modular programming concepts
CO3	Understand the use of Pointers and Strings
CO4	Use different data structures and create/update basic data files.

Contribution of Course Outcomes towards achievement of Program Outcomes
(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	2	2	1	1	1	2					
CO2	3	3	3	3	1	3	1					1
CO3	3	3	3	3	1	3	2					2
CO4	3	3	3	3	1	3	2					2

UNIT I

Introduction to Programming: Computer - Components, Types of Languages, Compiler, Algorithms and their representations: Flowcharts, Pseudo Code.
Introduction to C: "Hello World" in C – Editor, Compiler, Execution Environment. C as a Middle Level Language. Basic Structure of C program, Standard Library and Header Files, Tokens in C - Variable, Constant (literal and named), Data types, Keywords, Variable Declaration and Assignment. Operators - Precedence & Associativity. Type conversion, Input and Output statements.
Selection and Looping Statements: If statement, If-Else Statement, Nested If, Examples, Multi-way selection: Switch, Else-If, examples, While Statement, For Statement, Nested Loops, do-while Statement, Break and Continue statements, Example programs

UNIT II

Arrays: Concept, Declaration and Initialization of Arrays, Accessing Individual Elements of Array. Use of Arrays in Sorting, Searching. Concept of 2-D array (Matrix), Passing arrays to functions, Examples.

Functions: Need of Functions, Function Declaration, Definition and Call. Inbuilt functions and User Defined Functions. Passing arguments to a function, Returning values from a function. Scope of variable, local and global variable. Storage classes.

Recursive Functions: Need of Recursion, Direct Recursion, Indirect Recursion, Examples of Recursive Programs – Factorial, Fibonacci series. Recursive Vs Iterative solutions,Disadvantages of Recursion.

UNIT III

Pointers: Concept of Pointers, Relevance of Data type in Pointer Variable, Pointer arithmetic. Pointer to pointer. Pointers and Functions (passing pointers to functions, returning pointers from functions). Pointers and Arrays. Pointers and Strings. Array of Pointers, Pointer to Array. Various alternatives of accessing arrays (1-D and 2-D) using pointers, Dynamic Memory Allocation ,Command Line Arguments

Strings: Strings as Arrays, Character Array versus Strings, Reading Strings, Writing Strings, User Defined Functions for String Operations – Copy, Concatenate, Length, Reverse, Converting case, Appending, Comparing two strings, Extracting a substring. Array of strings.

UNIT IV

Structures & Unions: Notion, Declaration and Initialization, Structure Variables, Accessing and Assigning values of the fields, Functions and Structures, Arrays of Structures, nested structures, Pointers and Structures, Passing Structure to a Function and Returning Structure from Function. Introduction to self referential structures , Union, Nesting of Structure and Union. Enumerated data types.

Data Files: Declaring, Opening and Closing File Streams, Reading From and Writing to Text Files, Random File Access

TEXT BOOKS:
1. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage

REFERENCE BOOKS:
1.Programming in ANSIC 7th Edition by E.Balaguruswamy
2.Let us C by Yaswanth Kanetkar
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.
4. Programming with C, Bichkar, Universities Press.
5. Programming in C, ReemaThareja, OXFORD.
6. C by Example, Noel Kalicharan, Cambridge.
7. ANSI C Programming, Gary J. Bronson, Cengage Learning.

E-RESOURCES:
1. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical-programming-in-c-january-iap-2010/lecture-notes/

2. http://cslibrary.stanford.edu/101/EssentialC.pdf

3. http://nptel.ac.in/courses/106104128/

4. http://www.vssut.ac.in/lecture_notes/lecture1424354156.pdf

ENGINEERING GRAPHICS
(Common to EEE, ECE, CSE& IT)

Lecture – Practice:	1 – 2	**Internal Marks:**	40
Credits:	2	**Semester end assessment:**	60
		(Internal Only)	

Prerequisites:

> Knowledge of basic mathematical concepts (Geometry)
> Drawing skills

Course Objectives:

- To introduce the students to use drawing instruments and to draw polygons, Engineering Curves.
- To introduce the students to use of orthographic projections, projections of points, lines &
  Lines inclined to both the planes.
- To make the students draw the projections of the planes and solids at various positions with reference planes.
- The student will be able to represent and convert the pictorial views to orthographic views and vice versa by using AutoCAD as well as conventional.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1	Understand simple geometric construction like polygons, engineering curves and scales.
CO2	Understand orthographic projection of points, straight lines- inclined to one plane and inclined to both the planes.
CO3	Understand orthographic projection of planes and solids at various positions with different reference planes.
CO4	Understand The transformation of orthographic views into pictorial views and vice versa through AutoCAD as well as conventional drawing.

Contribution of Course Outcomes towards achievement of Program Outcomes (1– Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	1	2	2	2	1	-	-	3	-	1
CO2	3	2	1	2	2	2	1	-	-	3	-	1
CO3	3	2	1	2	2	2	1	-	-	3	-	1
CO4	3	2	1	2	2	2	1	-	-	3	-	1

UNIT I
Introduction to engineering drawing:
Polygons: Construction of regular polygons by general methods, inscribing and

describing polygons with circles.

Conics: Construction of Parabola, Ellipse and Hyperbola by using general methods and also draw tangents & normals for the curves.

UNIT II

Introduction to orthographic projections:

Projections of points and lines: Horizontal plane, vertical plane, profile plane, importance of reference planes, projections of points in various quadrants. Projections of straight lines- perpendicular lines, inclined lines and parallel to either of the reference planes(HP,VP or PP).

Projections of lines inclined to both the planes:

Projections of straight lines inclined to both the planes, determination of true lengths, angle of inclination .

UNIT III

Projections of planes: regular planes perpendicular/parallel to one plane and inclined to the other reference plane.

Projections of Solids: projections of Prisms, Pyramids, Cones and Cylinders with the axis parallel/perpendicular/ inclined to one of the planes and vice versa.

UNIT IV

Transformation of Projections: AutoCAD Fundamentals.

Conversion of Pictorial views to orthographic views Using AutoCAD and conventional.

Conversion of orthographic views to isometric views. Isometric drawing of simple objects through AutoCAD.

TEXT BOOKS:
1. Engineering Drawing by N.D. Butt, Chariot Publications
2. Engineering Drawing by Agarwal & Agarwal, Tata McGraw Hill Publishers

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

E-RESOURCES:
2. http://nptel.iitm.ac.in/

ENVIRONMENTAL STUDIES
(Common to CE,EEE,ME,CSE and IT)

Lecture – Tutorial: 2-1	**Internal Marks:** 40
Credits: --	**External Marks:** 60

Prerequisites:

Course Objectives:
- Basic understanding of ecosystem and to know the importance of biodiversity.
- Understanding of natural resources.
- To understand different types of pollutants effecting the environment.
- To know global environmental problems, problems associated with over population and burden on environment.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1 Realize the importance of ecosystem and biodiversity for maintaining ecological balance.

CO2 Understand the role of natural resources for the sustenance of life on earth and recognize the need to conserve them.

CO3 Identify the environmental pollutants and abatement devices.

CO4 Gain the importance of sustainability.

Contribution of Course Outcomes towards achievement of Program Outcomes
(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2		3			2	3	2			2	1
CO2	2		3			2	3	2			2	1
CO3	2		3			2	3	2			2	1
CO4	2		3			2	3	2			2	1

UNIT I

Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Ecological succession. – Food chains, food webs and ecological pyramids, flow of energy, biogeochemical cycles.

Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity, 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.

UNIT II

Natural Resources: 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. Case studies.

Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction.

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.

UNIT III

Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards, Technological solutions for pollution control, Role of an individual in prevention of pollution with case studies.

Solid Waste Management: Sources, Classification, effects and control measures of urban andindustrial solid wastes. Biomedical, Hazardous and **E-waste** management, carbon credits.

Disaster management: floods, droughts, earthquakes, cyclones.

UNIT IV

Social issues and the environment: Global environmental challenges- global warming and climate change, acid rains, ozone layer depletion.

Towards sustainable future: From unsustainable to sustainable development, population and its explosion, urban problems related to energy, rain water harvesting, consumerism and waste products, role of IT in environment and human health, HIV/ AIDS, environmental ethics.

Environmental management and acts: Impact assessment and significance, various stages of EIA, environmental management plan (EMP), green belt development. Environmental Law (Air, Water, Wildlife, Forest, Environment protection act).

The student should visit an industry/ Ecosystem and submit a report individually on any issues related to environmental studies course and make a power point presentation.

TEXT BOOKS:

1. Environment Studies, Anubha Kaushik, C P Kaushik, New Age International Publishers, 2018
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P. N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

REFERENCE BOOKS:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. Environmental Studies, K. V. S. G. Murali Krishna, VGS Publishers, Vijayawada.
3. Erach Bharucha, 2010 " Text Book of Environmental Studies" , University Grants Commission, University Press (India) Pvt. Ltd., Hyderabad.
4. Text book of Environmental Science and Engineering by G. Tyler Miller Jr, 2006 Cengage learning.

E-RESOURCES:

1. http://nptel.ac.in/courses.php.
2.http://jntuk-coeerd.in/

ENGLISH COMMUNICATION SKILLS LAB-I

Practice:	3 Hours	Internal Marks:	40
Credits:	1.5	External Marks:	60

Prerequisites:

None

Course Objectives:

To enable the students to learn through practice the four communication skills: Listening, Speaking, Reading and Writing.

Understand the nuances of language usage for better presentation in all the walks of life promoting life-long learning.

Course Outcomes:

Upon successful completion of the course, the student will be able to:

CO1	Understand the importance of communication skills and instill the need for life-long learning.
CO2	Express themselves fluently and appropriately in social and professional contexts.
CO3	Make sense of both verbal and non-verbal messages through selected listening activities.
CO4	Aware of the need of pronunciation and intonation in improving their speaking skills.

Contribution of Course Outcomes towards achievement of Program Outcomes

(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1						1			1	3		2
CO2						1			1	3		2
CO3									1	3		2
CO4											1	2

List of Experiments:

UNIT 1:
1. Why study Spoken English?
2. Making Inquiries on the phone, thanking and responding to Thanks
3. Responding to Requests and asking for Directions
Practice work.

UNIT 2:
1. Asking for Clarifications, Inviting, Expressing Sympathy, Congratulating
2. Apologising, Advising, Suggesting, Agreeing and Disagreeing
Practice work.

UNIT 3:
1. Letters and Sounds
2. The Sounds of English
Practice work.

UNIT 4:
1. Pronunciation
2. Stress and Intonation
Practice work.

Equipment Required:

Computer Assisted Language Laboratory with computers equipped with

software that help the students in developing four skills – Listening, Speaking,

Reading and Writing.

Reference Books:

10. INTERACT: English Lab Manual for Undergraduate Students' Published by Orient Blackswan Pvt Ltd.
11. Strengthen your communication skills by Dr M Hari Prasad, Dr Salivendra Raju and Dr G Suvarna Lakshmi, Maruti Publications.
12. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
13. Unlock, Listening and speaking skills 2, Cambridge University Press
14. Spring Board to Success, Orient BlackSwan
15. A Practical Course in effective english speaking skills, PHI
16. Word power made handy, Dr shalini verma, Schand Company
17. Let us hear them speak, Jayashree Mohanraj, Sage texts
18. Professional Communication, Aruna Koneru, Mc Grawhill Education Cornerstone, Developing soft skills, Pearson Education

E-Resources:
1. https://www.britishcouncil.in/
2. http://www.talkenglish.com/

APPLIED PHYSICS LAB

| **Practice:** | 2 | **Internal Marks:** | 40 |
| **Credits:** | 1 | **External Marks:** | 60 |

Prerequisites: Knowledge of Vernier Calipers, Screw Gauge

Course Objectives: Training field oriented Engineering graduates to handle instruments and their design methods to improve the accuracy of measurements.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1	Calculate wavelengths of various light sources, thickness of the given object and radius of curvature of lens.
CO2	Determine Numerical Aperture & bending losses of Optical Fibre
CO3	Analyze the characteristics and energy band gaps of semi-conductor and zener diodes
CO4	Estimate the frequency of tuning fork and Magnetic field strength.

Contribution of Course Outcomes towards achievement of Program Outcomes (1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	3							3			
CO2	3	3			2				3			
CO3	3	3							3			
CO4	3	3							3			

List of Experiments:

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

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

15. Determination of thickness of a spacer using wedge film and parallel interference fringes. .

16. Determination of wavelength of laser source using diffraction grating.

17. Determination of Numerical Aperture of an Optical Fibre.

18. Study of I/V Characteristics of Semiconductor diode.

19. I/V characteristics of Zener diode.

20. Energy Band gap of a Semiconductor p - n junction

21. Meldi's experiment – Transverse and Longitudinal modes.

22. Magnetic field along the axis of a current carrying coil – Stewart and

Gee's apparatus

23. Verification of laws of vibrations in stretched strings – Sonometer

24. L- C- R Series Resonance Circuit.

EQUIPMENT REQUIRED:
10. Spectrometer
11. Travelling Microscope
12. Regulated Power Supply
13. Function Generators
14. Energy Band Gap Kit
15. Digital Mutlimetres
16. Tuning Forks
17. Electrically driven Tuning Forks
18. Tangent Galvanometer

REFERENCE BOOKS:
1. Lab Manual of Engineering Physics by Dr.Y.Aparna & Dr.K.Venkateswara Rao (VGS Books Links, Vijayawada)

E-RESOURCES:
1.www.vlab.co.in

PROGRAMMING AND PROBLEM SOLVING WITH C LAB

Practice: 3   **Internal Marks:** 40
Credits: 1.5   **External Marks:** 60

Prerequisites:

Course Objectives:
- Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
- Acquire knowledge about the basic concept of writing a program.
- Role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
- Use of conditional expressions and looping statements to solve problems associated withconditions and repetitions.
- Role of Functions involving the idea of modularity.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1	Understand C programming development environment, compiling, debugging, and linking and executing a program using the development environment
CO2	To solve the problems using selection and iterative statements
CO3	Analyzing the complexity of problems, Modularize the problems into small modules and then convert them into programs, Understand and apply the in-built functions and customized functions for solving the problems.
CO4	To solve the various problems using arrays, structures, pointers and files

Contribution of Course Outcomes towards achievement of Program Outcomes (1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	1	2	3	1	2					1
CO2	2	1	2	2	1	2	2					2
CO3	2	3	3	2	3	3	2					3
CO4	3	3	3	3	3	3	3					3

List of Experiments:
Exercise - 1 Basics
a) What is an OS Command, Familiarization of Editors - vi, Emacs
b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man
c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From
Command line
Exercise - 2 Basic Math
a) Write a C Program to Simulate 3 Laws at Motion
b) Write a C Program to convert Celsius to Fahrenheit and vice versa
Exercise - 3 Control Flow - I
a)Write a C Program to Find Whether the Given Year is a Leap Year or not.
b)Write a C Program to Add Digits & Multiplication of a number

Exercise – 4 Control Flow - II

a)Write a C Program to Find Whether the Given Number is

i) Prime Number

ii) Armstrong Number

b) Write a C program to print Floyd Triangle

c) Write a C Program to print Pascal Triangle

Exercise – 5 Functions

a) Write a C Program demonstrating of parameter passing in Functions and returning values.

b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion

Exercise – 6 Control Flow - III

a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using

switch...case

b) Write a C Program to convert decimal to binary and hex (using switch call function the

function)

Exercise – 7 Functions - Continued

Write a C Program to compute the values ofsin x and cos x and e^x values using Series

expansion. (use factorial function)

Exercise – 8 Arrays

Demonstration of arrays

a) Search-Linear.

b) Sorting-Bubble, Selection.

c) Operations on Matrix.

Exercises - 9 Structures

a)Write a C Program to Store Information of a Movie Using Structure

b)Write a C Program to Store Information Using Structures with Dynamically Memory

Allocation

c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function

Exercise - 10 Arrays and Pointers

a)Write a C Program to Access Elements of an Array Using Pointer

b) Write a C Program to find the sum of numbers with arrays and pointers.

Exercise – 11 Dynamic Memory Allocations

a) Write a C program to find sum of n elements entered by user. To perform this program,

allocate memory dynamically using malloc () function.

b) Write a C program to find sum of n elements entered by user. To perform this program,

allocate memory dynamically using calloc () function. Understand the difference between the

above two programs

Exercise – 12 Strings

a) Implementation of string manipulation operations with library function.

i) copy

ii) concatenate

iii) length

iv) compare

b) Implementation of string manipulation operations without library function.

i) copy

ii) concatenate

iii) length

iv) compare

Exercise -13 Files

a)Write a C programming code to open a file and to print it contents on screen.

b)Write a C program to copy files

Exercise - 14 Files Continued

a) Write a C program merges two files and stores their contents in another file.

b) Write a C program to delete a file.

EQUIPMENT REQUIRED:

1.Computer Systems with UNIX OS,GCC Compiler,VI Editor

REFERENCE BOOKS:

1. 1.Programming in ANSIC 7th Edition by E.Balaguruswamy

2.Let us C by Yaswanth Kanetkar

3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

E-RESOURCES:

1. http://www.skiet.org/downloads/cprogrammingquestion.pdf

2. http://www.c4learn.com/c-programs/

3. https://www.programiz.com/c-programming/examples

4. https://www.sanfoundry.com/c-programming-examples/
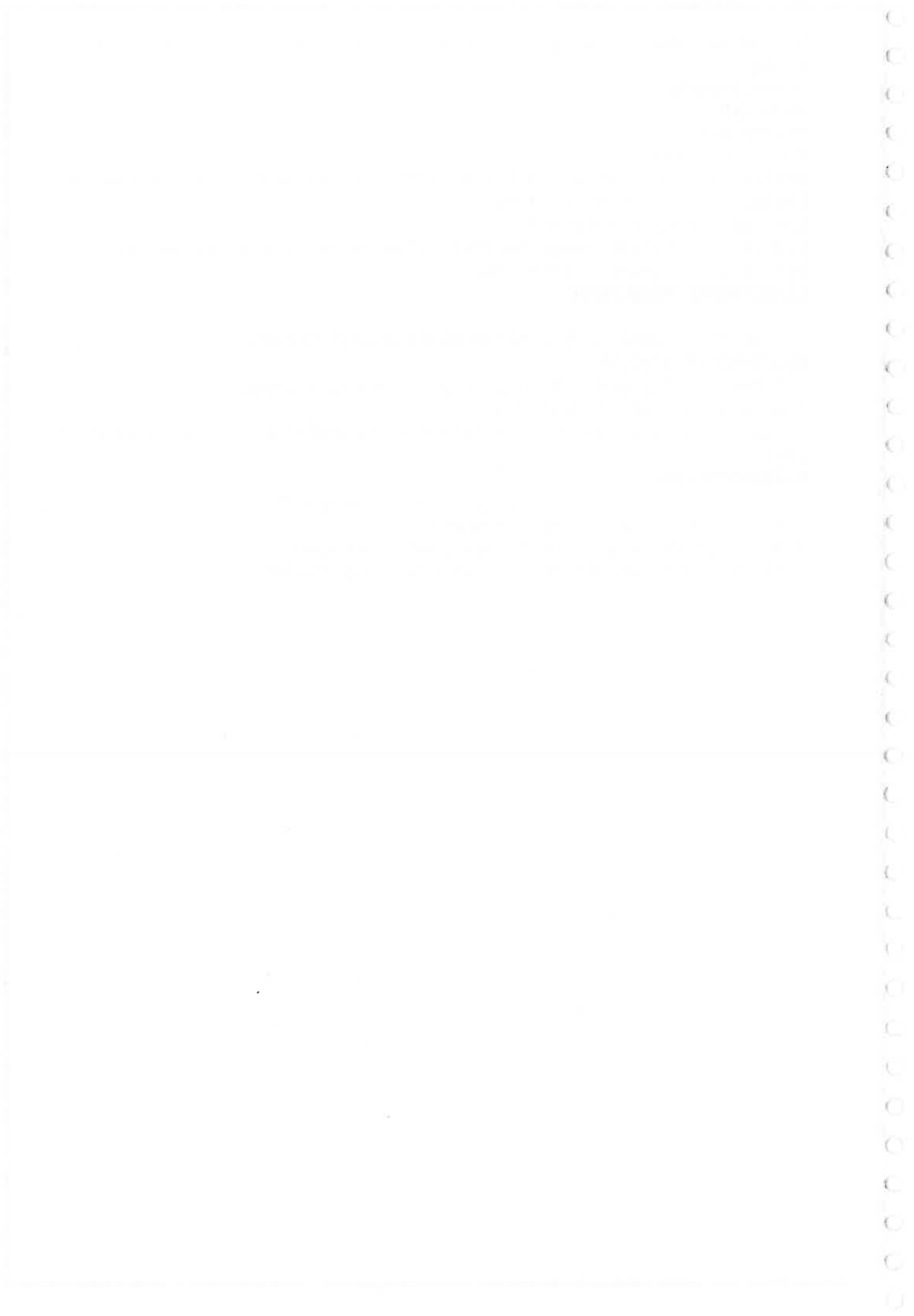
PROFESSIONAL ENGLISH-II
(Common to CE,EEE,ME,ECE,CSE and IT)

Lecture – Tutorial:	2-1	**Internal Marks:**	40
Credits:	3	**External Marks:**	60

Prerequisites:

Course Objectives:
1. To expose the students to components of grammar required in effective sentence constructions.
2. To help the students to develop effective writing skills using phrasal verbs, connectives, collocations, idioms etc.
3. To enable the students to learn the format, style and types of letters, reports and emails.
4. To expose the students to various sub skills and strategies of reading and writing.
5. To enable the students to analyse and evaluate various texts that lead to global comprehension.

Course Outcomes:
Upon successful completion of the course, the student will be able to:

CO1	Recognize the importance of the role of communication in the competitive world.
CO2	Acquire the competence to write effectively in various formal and academic contexts.
CO3	Acquire the jargon used in business communication and technical communication.
CO4	Develop the ability to evaluate texts by inferring the implied sense of such texts and apply such knowledge globally.
CO5	Gain knowledge about the significance of the universal human values through expression of human feelings of compassion and right understanding.

Contribution of Course Outcomes towards achievement of Program Outcomes
(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1									2	3		2
CO2										2		2
CO3										3		2
CO4												2
CO5								2				2

UNIT I
1. **Text**: A. **"The Struggle for an Education"** – Booker T. Washington
        B. **"Good Manners"** – J.C. Hill
2. **Writing**: Formal Communication VS Informal Communication -Writing
3. **Vocabulary**: Business and Technical Terminology
4. **Remedial Grammar**: Change of Voice

UNIT II
1. **Text: "A Letter to Indu"** – Jawaharlal Nehru
2. **Writing**: Letter Writing – Types of Letters – Different Styles of Letter Writing
3. **Vocabulary**: Phrasal Verbs – Use of Connectives in Sentence Constructions
4. **Remedial Grammar**: Reported Speech

UNIT III

1. **Text**: A. **"The Power of a Plate of Rice"** – Ifeoma Okoye
   B. **"Email to Employees"** – Satya Nadella
2. **Writing**: Email Writing, Report Writing (Significance, Format and style of writing Technical Reports)
3. **Vocabulary**: Collocations
4. **Remedial Grammar**: Subject-Verb Agreement

UNIT IV

1. **Text**: **"Stench of Kerosene"** – Amrita Pritam
2. **Writing**: Essay Writing –Types of Essays
3. **Vocabulary**: Use of Idiomatic Expressions (in different contexts)
4. **Remedial Grammar**: Common Errors

TEXT BOOKS:

REFERENCE BOOKS:

1. Advanced Grammar in Use. Martin Hewings. Cambridge University Press. 2013
2. Effective Technical Communication Rizvi, Ashraf. M.. Tata McGraw – Hill, New Delhi. 2005
3. Word Power Made Easy. Norman Lewis
4. Michael Swan. Basic English Usage
5. A New Approach to Objective English. Dhillon Group of Publications
6. English and Soft Skills. Dhanavel S. P. Orient Black Swan, Hyderabad, 2010
7. Professional Communication. Baradwaj Kumkum. I.K. International Publishing House Pvt. Ltd, New Delhi .2008
8. Intermediate English Grammar, Raymond Murphy, Cambridge University Press.

E-RESOURCES:

1. http://grammar.ccc.commnet.edu/grammar/index.htm
2. https://owl.english.purdue.edu/
3. https://learnenglish.britishcouncil.org/en

ENGINEERING MATHEMATICS-II
(Common to CE,EEE,ME,ECE,CSE and IT)

Lecture – Tutorial:	3 – 1	Internal Marks:	40
Credits:	4	External Marks:	60

Prerequisites:
Student has a knowledge about Trigonometric functions and its related formulae, Differentiation , Integration and vector algebra.

Course Objectives:

- The course is designed to equip the students with the necessary skills and techniques that are essential for Engineering course.
- The skills derived from the course will help the student from a necessary base to develop analytic and design concepts.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:

CO1	Finding the General solution of first order ordinary differential equation and its applications.
CO2	Finding the General solution of second and higher order ordinary differential equations with constant and variable coefficients.
CO3	Determine double integral over a region and triple integral over a volume.
CO4	Determine the Gradient, Diveregence and Curl of a vector and vector identities.

Contribution of Course Outcomes towards achievement of Program Outcomes
(1– Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2		1	2						1	1
CO2	3	2		1	2						1	1
CO3	3	2		1	1						1	1
CO4	3	2		1	1						1	1

UNIT I
Ordinary differential equations of first order and applications

Linear – Bernoulli – Exact – Reducible to exact differential equations – Ort trajectories –
Newton's law of cooling – Law of exponential growth and decay .

UNIT II
Ordinary differential equations of 2nd and higher order

Non homogeneous equations of higher order with constant coefficients with Right hand side terms of the type $e^{ax}, \sin ax, \cos ax, x^k (k > 0), e^{ax}V, x^m V$ – Variation of parameters – Differential equations with variable coefficients (Legendre and Cauchy)

UNIT III

Multiple Integrals

Multiple Integrals – Double and Triple Integrals – Change of variables – Change of integration.

Applications: Finding Areas, Surfaces and Volumes.

UNIT IV

Vector Calculus

Vector differentiation – Gradient – Divergence – Curl – Vector identies.

Vector Integration – Line integral – work done – Potential function – area – surface and volume integrals – Vector integral theorems (without proof) viz. Greens, stokes and Gauss divergence and related problems.

TEXT BOOKS:

1.B.S.Grewal, "Higher Engineering Mathematics, Khanna Publishers", 43rd Edition, 2014.

REFERENCE BOOKS:

1. **N.P.Bali**, Engineering Mathematics, Lakshmi Publications.

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

E-RESOURCES:

1.www.nptel**videos.com/mathematics/ (Math Lectures from MIT,Stanford,IIT'S)**

2.**nptel.ac.in/courses/122104017**

3.**nptel.ac.in/courses/111105035**

APPLIED CHEMISTRY
(Common to CSE,IT,ECE,EEE)

Lecture – Tutorial:	2-1	**Internal Marks:**	40
Credits:	3	**External Marks:**	60

Prerequisites:

Course Objectives:
Knowledge of basic concepts of Chemistry for Engineering students will help them as professional engineers later in design and material selection, as well as utilizing the available resources.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1	Plastics have become part of our life. Hence their preparation, fabrication and study of properties are essential to engineering students.
CO2	Study of electrochemistry helps in developing efficient cells and batteries and thorough understanding of corrosion and its prevention.
CO3	With the increase in demand for power and also with depleting sources of fossil fuels, the demand for alternative sources of fuels is increasing. Some of the prospective fuel sources are introduced
CO4	Nano materials, superconductors and liquid crystals are advanced engineering materials with exceptional properties can be exploited by engineering students. The green synthesis must be understood to keep the planet earth safe.

Contribution of Course Outcomes towards achievement of Program Outcomes (1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	1	3									
CO2	3	1	2									
CO3	2	1										
CO4	1				2							

UNIT I
POLYMERS
Introduction-methods of polymerization-(emulsion and suspension)-physical and mechanical properties.
Plastics– Introduction-Thermoplastics and Thermosetting plastics – Compounding and fabrication (compression, injection, transfer & extrusion)-Preparation, properties and applications of polythene, PVC, Bakelite and Teflon
Elastomers: - Natural rubber- compounding and vulcanization – Synthetic rubbers: Buna S, Buna N and Thiokol– Applications of elastomers.
Fiber reinforced plastics – Biodegradable polymers – Conducting polymers.
UNIT II

ELECTROCHEMISTRY AND CORROSION

Galvanic cells - Reversible and irreversible cells – Single electrode potential – Electrochemical series and uses of this series- Standard Hydrogen electrode and Calomel electrode - Concentration Cells

Batteries: Dry Cell – Li- cells (Liquid cathode and solid cathode Li cells).

Fuel cells-Hydrogen-oxygen and methyl alcohol-oxygen fuel cells

Corrosion :- Definition – Theories of Corrosion (chemical & electrochemical) – Formation of galvanic cells by different metals, by concentration cells, by differential aeration and waterline corrosion – Passivity of metals – Pitting corrosion - Galvanic series – Factors which influence the rate of corrosion - Protection from corrosion – Cathodic protection – Protective coatings: Galvanizing, Tinning, Electroplating, Electro less plating.

UNIT III

NON CONVENTIONAL ENERGY SOURCES

Solar energy: Introduction, application of solar energy, conversion of solar energy(thermal and photo conversion)-photovoltaic cell: design, working

Hydro power include setup a hydropower plant (diagram)-Geothermal energy: introduction-design geothermal power plant-Tidal and wave power: Introduction-design and working-movement of tides and their effect on sea level-Ocean thermal energy: Introduction, closed cycle, open cycle, hybrid OTEC, diagram and explanation-.Biomass and bio fuels

UNIT IV

Chemistry of Advanced materials

Nano materials: Introduction –Sol- gel method &chemical reduction method of preparation-characterization by BET methods-carbon nano tubes and fullerenes: Types, preparation and properties and applications.

Liquid crystals: Introduction-Types-Applications.

Super conductors: definition-types-properties-application.

Semi conductors: Preparation of Semiconductors Si and Ge(two methods)

Green chemistry: principles-phase transfer catalyst method-supercritical fluid extraction methods

TEXT BOOKS:

1. Engineering Chemistry by Jain and Jain; Dhanpati Rai Publications
2. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

REFERENCE BOOKS:

1. Engineering Chemistry of Wiley India Pvt. Ltd., Vairam and others, 2014 edition (second).
2. Engineering Chemistry by Prasanth Rath, Cengage Learning, 2015 edition.
3. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition
4. Applied Chemistry by H.D. Gesser, Springer Publishers
5. Text book of Nano-science and nanotechnology by B.S. Murthy, P. Shankar and others, University Press, IIM

E-RESOURCES:

1.www.nptel.ac.in
2.www.swayam.gov.in

FUNDAMENTALS OF ELECTRICAL ENGINEERING
(Common to CSE,IT)

Lecture – Tutorial:	3 – 1	Internal Marks:	40
Credits:	3	External Marks:	60

Course Objectives:

- To inculcate the understanding about the electrical fundamentals
- To impart the basic knowledge about the Magnetic circuits
- Identification of various components and Understanding the operation of CRO.
- Understanding the importance of various sources and their Conversion.

Course Outcomes:

Upon successful completion of the course, the student will be able to:

CO1	Understand the importance of Electric circuits & Elements.
CO2	Understanding about the Magnetic Circuits.
CO3	Identification of various components and Understanding the operation of CRO.
CO4	Understanding the importance of various sources and their Conversion.

Contribution of Course Outcomes towards achievement of Program Outcomes
(1– Low, 2- Medium, 3 – High)

	PO a	PO b	PO c	PO d	PO e	PO f	PO g	PO h	PO i	PO j	PO k	PO l
CO1	3	3	1	2								
CO2	3	2		2								
CO3	2	1										
CO4	3	3		2								

UNIT I
Fundamentals of Electricity : Introduction to circuit elements (R,L & C) – Electric current – Electric Potential difference – Ohm's law -Factors upon which Resistance depends – Specific Resistance – Effect of Temperature on Resistance – Temperature coefficient of Resistance – Series & parallel connection of Resistances , Inductances & Capacitances - Kirchhoff's laws (KCL & KVL)– Basic types of Sources (Independent Sources).

UNIT II
Protective Devices : Types of Fuses, Characteristics , Materials Used, Fuse Rating – Types of Switches , Materials used, Symbols – Types of Circuit breakers - Types of Resistors , Rating – Colour coding of R,L & C

UNIT III
Earthing : Need and Necessity of Earthing – Types of Earthing – Simple Earthing circuits for

domestic appliances – Procedure of Earthing – Earthing of Generators, Motors, Transformers, Transmission Lines – Calculation earth resistance – Perfect Earthing - Importance of Neutral

Electrical Safety :

Electrical Shock – Types of First aids – Safety Norms – Human Body response for various electric voltages

UNIT IV

Measuring Instruments :

Types of Measuring Instruments – Principle of operation - Measurement of current, voltage, power, energy, Resistance, Inductance & capacitance – Earth Resistance – Principle of operation of CRO.

TEXT BOOKS:

1. Principles of Electrical Engineering by V.K Mehta, S.Chand Publications.

2. Elec., Technology by Edward Hughes

3. Electronic Principles by Sanjay Sharma , S.K.Katraia and Sons publications, 2nd edition

4. Electronics Devices and Circuits , S.Salivahanan ,N.Suresh Kumar,A.Vallava Raj, TMH publications , 4th edition

REFERENCE BOOKS:

1. Theory and Problems of Basic Electrical Engineering by D.P.Kothari & I.J. Nagrath PHI.

2. Basic Electrical Engineering by Fitzgerald and Higginbotham

3. Electrical Engineering fundamentals by Vincent Del Toro – PHI, New Delhi

E-RESOURCES:

1. http://nptel.ac.in/courses.php

2. http://jntuk-coeerd.in/

3. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/

OOPS THRUGH JAVA
(Common to CSE,IT)

Lecture – Tutorial: 2-1   **Internal Marks:** 40
Credits: 3   **External Marks:** 60

Prerequisites:

Course Objectives:
- To introduce the object oriented programming concepts.
- To understand object oriented programming concepts, and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes
- To introduce the implementation of packages and interfaces
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets.

COURSE OUTCOMES:
Upon successful completion of the course, the student will be able to:

CO1	Able to solve real world problems using OOP techniques
CO2	Able to understand the use of Inheritance, Abstract Classes and Packages
CO3	Able to develop multithreaded applications with synchronization and Exception Handling.
CO4	Able to develop applets for web applications

Contribution of Course Outcomes towards achievement of Program Outcomes (1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	1	2	3	1	2	--	1	--	2	1
CO2	2	1	2	2	1	2	2	--	2	--	2	2
CO3	2	3	3	2	3	3	2	--	3	--	2	3
CO4	3	3	3	3	3	3	3	--	3	--	3	3

UNIT I

UNIT-I:
Introduction to OOP, Procedural Programming Language and Object Oriented Language, Principles of OOP, Applications of OOP, History of JAVA, JAVA features, JVM, Program Structure. Variables, Primitive Data Types, Identifiers, Literals, Operators, Expressions, Precedence Rules and Associativity, Primitive Type Conversion and Casting, Flow of Control. Classes and Objects, Class declaration, Creating Objects, Methods, Method Overloading

UNIT II
Constructor, Overloading, Garbage Collector, Importance of Static Keyword and this keywords, Examples, Arrays, Command Line Arguments, Nested Classes.
Inheritance & Polymorphism: Basic concepts of Inheritance, Member access, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, Relationships, Creating Multilevel Hierarchy, super uses, using final with Inheritance, Polymorphism, Runtime polymorphism, pure polymorphism, method overriding, abstract classes & Methods, Object class
Packages: Defining a Package, PATH, CLASSPATH, Difference between PATH

and CLASS PATH, Access protection, importing packages.

UNIT III

Interfaces: Defining an interface, implementing interfaces, Nested interfaces, variables in interfaces and extending interfaces, Multiple inheritances of interfaces, Difference between Abstract class & Interfaces.

Exception handling : Fundamentals of exception handling, Exception types, Termination or resumptive models, Uncaught exceptions, using try and catch, multiple catch clauses, nested try statements, throw, throws and finally, built-in exceptions, creating own exception sub classes.

Multithreading: Thread Introduction, Differences between thread-based multitasking and process-based multitasking, Thread life cycle , creating threads using Thread class and Runnable Interface, Thread Priorities, synchronizing threads, inter thread communication.

UNIT IV

Files: Reading data from files and writing data to files, Random Access File,

Applet: Applet class, Applet structure, Applet life cycle, sample Applet programs. Event handling: event delegation model, sources of event, Event Listeners, adapter classes, inner classes.

TEXT BOOKS:

1. Java The complete reference, 9th edition, Herbert Schildt, McGraw Hill Education (India) Pvt. Ltd.
2. Understanding Object-Oriented Programming with Java, updated edition, T. Budd, Pearson Education.

REFERENCE BOOKS:

1. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, John Wiley & sons.
2. Introduction to Java programming, Y. Daniel Liang, Pearson Education.
3. Object Oriented Programming through Java, P. Radha Krishna, Universities Press.
4. Programming in Java, S. Malhotra, S. Chudhary, 2nd edition, Oxford Univ. Press.
5. Java Programming and Object oriented Application Development, R. A. Johnson, Cengage Learning.

E-RESOURCES:

1. http://programmingbydoing.com
2. www.learnjavaonline.org
3. https://www.tutorialspoint.com/java
4. http://www.mindfiresolutions.com/blog/2017/12/best-resources-learn-java/
5. https://www.javatpoint.com
6. https://nptel.ac.in/courses

ENGLISH COMMUNICATION SKILLS LAB-II

Practice:	3	**Internal Marks:**	40
Credits:	1.5	**External Marks:**	60

Prerequisites:

Course Objectives:
To enable the students to learn through practice the four communication skills: Listening, Speaking, Reading and Writing.
Understand the nuances of language usage for better presentation in all the walks of life promoting life-long learning.

Course Outcomes:
Upon successful completion of the course, the student will be able to:

CO1	Attain better understanding of the nuances of English language to put into use in various situation and events.
CO2	Acquire speaking skills with clarity and confidence which in turn enhances their employability skills.
CO3	Communicate and present their ideas and sources accurately and effectively.
CO4	Enhance their employability skills and critical thinking skills with participation in mock interviews and group discussions.

Contribution of Course Outcomes towards achievement of Program Outcomes
(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1									1	3		2
CO2										3		2
CO3									1	3		2
CO4									1			2

List of Experiments:

UNIT 1:
1. Debating
Practice work

UNIT 2:
1. Group Discussions
Practice work

UNIT 3:
1. Presentation Skills
Practice work

UNIT 4:
1. Interview Skills
2. Curriculum Vitae
Practice work

EQUIPMENT REQUIRED:
Computer Assisted Language Laboratory with computers equipped with software that help the students in developing four skills – Listening, Speaking, Reading and Writing.

REFERENCE BOOKS:

1. INTERACT: English Lab Manual for Undergraduate Students' Published by Orient Blackswan Pvt Ltd.
2. Strengthen your communication skills by Dr M Hari Prasad, Dr Salivendra Raju and Dr G Suvarna Lakshmi, Maruti Publications.
3. English for Professionals by Prof Eliah, B.S Publications, Hyderabad.
4. Unlock, Listening and speaking skills 2, Cambridge University Press
5. Spring Board to Success, Orient BlackSwan
6. A Practical Course in effective english speaking skills, PHI
7. Word power made handy, Dr shalini verma, Schand Company
8. Let us hear them speak, Jayashree Mohanraj, Sage texts
9. Professional Communication, Aruna Koneru, Mc Grawhill Education
10. Cornerstone, Developing soft skills, Pearson Education

E-RESOURCES:

1. 1. https://www.britishcouncil.in/
2. http://www.talkenglish.com/

APPLIED CHEMISTRY LAB

Practice:	2	**Internal Marks:**	40
Credits:	1	**External Marks:**	60

Prerequisites:

Course Objectives:

To provide knowledge of chemistry practical's. It enables the students to analyze the different parameters of water sample like hardness and alkalinity and different volumetric titrations. It makes the students to obtain basic knowledge of instrumentation based on different Engineering applications.

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:

CO1	Perform different volumetric titrations listed in syllabus.
CO2	To analyze various parameters of water sample.
CO3	Instrumental methods of chemical analysis exhibit the skill of the students.
CO4	Preparation of different compounds provides knowledge to the students.

Contribution of Course Outcomes towards achievement of Program Outcomes

(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	1	2										
CO2	1	2										
CO3	1											
CO4	1											

List of Experiments:

1. Determination of HCl by Na_2CO_3 solution

2. Determination of alkalinity of sample containing Na_2CO_3 and NaOH

3. Determination of $KMnO_4$ using standard oxalic acid solution

4.Determination of total hardness of water by EDTA solution

5.Determination of copper using standard EDTA solution

6.Determination of Zinc using standard EDTA solution

7.Determination of Iron by a calorimetric method

8.Conductometric titration between strong acid and strong base

9.Potentiometric titration between strong acid and strong base

10.Potentiometric titration between Iron and dichromate

Additional Experiments to be performed

1.Preparation of urea-formaldehyde resin

2.Determination of P^H of water sample

3. Preparation of phenol-formaldehyde resin

EQUIPMENT REQUIRED:

PH meters, Potentiometers, Conductometers, colorimeters.

APPARATUS

Burettes, Pipettes, Conical flask, Beakers.

REFERENCE BOOKS:

1 . A Textbook of Quantitative Analysis, Arthur J. Vogel.

2. Dr. Jyotsna Cherukuri (2012) *Laboratory Manual of engineering chemistry-II,* VGS Techno Series

3. Chemistry Practical Manual, Lorven Publications

4. K. Mukkanti (2009) *Practical Engineering Chemistry,* B.S. Publication

AUTOMATION TOOLS & PROFESSIONAL WORKSHOP

Practice:	2	**Internal Marks:**	40
Credits:	1.5	**External Marks:**	60

Prerequisites: Knowledge of information technology workshop

Course Objectives:
1. Understand the basic components and peripherals of a computer.
2. To become familiar in configuring a system.
3. Learn the usage of productivity tools
4. Acquire knowledge about the netiquette and cyber hygiene
5. Get hands on experience in trouble shooting a system

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:

CO1 Understand and Apply MS Office tools

CO2 Configure the components on the motherboard and install different operating systems

CO3 Understand and configure different storage media

CO4 Identified strategies for overcoming constraints to effective decentralization and sustainable management at different levels

Contribution of Course Outcomes towards achievement of Program Outcomes

(1 – Low, 2 - Medium, 3– High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	3	2	3	2	2	2	1	2	3	1	3	2
CO2	3	1	3	-	2	1	1	-	1	1	3	2
CO3	3	1	2	-	2	2	1	-	1	1	2	2
CO4	3	2	2	1	-	2	1	1	1	1	2	2

List of Experiments: 10

1.Identification of the peripherals of a computer: To prepare a report containing the block diagram of the CPU along with the configuration of each peripheral and its functions. Description of various I/O Devices

2.System Assembling, Disassembling: A practice on disassembling the components of a PC and assembling them to back to working condition.

3.Operating System Installation-Install Operating Systems like Windows, Linux along with necessary Device Drivers.

4.MS-Office / Open Office
   a. Word - Formatting, Page Borders, Reviewing, Equations, symbols.
   b. Spread Sheet - organize data, usage of formula, graphs, charts.
   c. Power point - features of power point, guidelines for preparing an effective presentation.
   d. Access- creation of database, validate data

5. Network Configuration & Software Installation-Configuring TCP/IP, proxy and firewall settings. Installing application software, system software & tools.

6. Internet and World Wide Web-

Cyber Hygiene (Demonstration): Awareness of various threats on the internet. Importance of security patch updates and anti-virus solutions. Ethical

Hacking, Firewalls, Multi-factor authentication techniques including Smartcard, Biometrics are also practiced

7.Search Engines & Netiquette:
Students are enabled to use search engines for simple search, academic search and any other context based search (Bing, Google etc). Students are acquainted to the principles of micro-blogging, wiki, collaboration using social networks, participating in online technology forums

8. Trouble Shooting-Hardware trouble shooting, Software trouble shooting.
Hardware Troubleshooting (Demonstration): Identification of a problem and fixing a defective PC(improper assembly or defective peripherals).
Software Troubleshooting (Demonstration):. Identification of a problem and fixing the PC for any software issues
9. MATLAB- basic commands, subroutines, graph plotting.
10. LATEX-basic formatting, handling equations and images.
EQUIPMENT REQUIRED:
1. Physical components of computer

REFERENCE BOOKS:
1. Computer Hardware, Installation, Interfacing, Troubleshooting and Maintenance, K.L. James, Eastern Economy Edition.
2. Microsoft Office 2007: Introductory Concepts and Techniques, Windows XP Edition by Gary B. Shelly, Misty E. Vermaat and Thomas J. Cashman (2007, Paperback).
3. LATEX- User's Guide and Reference manual, Leslie Lamport, Pearson, LPE, 2/e.
4. Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers, Rudraprathap, Oxford University Press, 2002.
5. Workshop Manual prepared by NRIIT staff

E-RESOURCES:
1.http://nptel.iitm.ac.in
2.JNTUK-COERD
VIRTUAL LAB:
1. http://vlab.amrita.edu/?sub=1&brch=201&sim=366&cnt=1
2. http://vlab.amrita.edu/?sub=1&brch=195&sim=840&cnt=1
3. http://vlab.amrita.edu/?sub=1&brch=282&sim=879&cnt=1

OOPS THROUGH JAVA LAB

Practice:	4	**Internal Marks:**	40
Credits:	2	**External Marks:**	60

Prerequisites:

Course Objectives:
- To introduce java compiler and eclipse platform.
- To impart hands on experience with java programming
- To write programs using abstract classes, inheritance, polymorphism, exception handling and multithreading.
- To write programs for solving real world problems

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:

CO1	*Able to write programs for solving real world problems using basic concepts of java*
CO2	*Able to write programs using abstract classes, interfaces and exception handling.*
CO3	*Able to write programs using inheritance, multithreaded programs.*
CO4	*Able to write code snippets for applet programming*

Contribution of Course Outcomes towards achievement of Program Outcomes
(1 – Low, 2- Medium, 3 – High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	3	1	2	3	1	2	--	1	--	2	1
CO2	3	1	2	2	1	2	2	--	2	--	2	2
CO3	1	3	2	2	3	3	2	--	3	--	2	3
CO4	3	3	3	2	2	3	3	--	1	--	3	3

List of Experiments:

Exercise - 1 (Basics)

a). Write a JAVA program to display default value of all primitive data type of JAVA

b). Write a java program that display the roots of a quadratic equation $ax^2+bx=0$. Calculate the discriminate D and basing on value of D, describe the nature of root.

c). Five Bikers Compete in a race such that they drive at a constant speed which may or may not be the same as the other. To qualify the race, the speed of a racer must be more than the average speed of all 5 racers. Take as input the speed of each racer and print back the speed of qualifying racers.

Exercise - 2 (Operations, Expressions, Control-flow, Strings)

a). Write a JAVA program to search for an element in a given list of elements using binary search mechanism.

b). Write a JAVA program to sort for an element in a given list of elements

using bubble sort

(c). Write a JAVA program to sort for an element in a given list of elements using merge sort.

(d) Write a JAVA program using StringBufferto delete, remove character.

Exercise - 3 (Class, Objects)

a). Write a JAVA program to implement class mechanism. – Create a class, methods and

invoke them inside main method.

b). Write a JAVA program to implement constructor.

Exercise - 4 (Methods)

a). Write a JAVA program to implement constructor overloading.

b). Write a JAVA program implement method overloading.

Exercise - 5 (Inheritance)

a). Write a JAVA program to implement Single Inheritance

b). Write a JAVA program to implement multi level Inheritance

c). Write a java program for abstract class to find areas of different shapes

Exercise - 6 (Inheritance - Continued)

a). Write a JAVA program give example for "super" keyword.

b). Write a JAVA program to implement Interface. What kind of Inheritance can be achieved?

Exercise - 7 (Exception)

a).Write a JAVA program that describes exception handling mechanism

b).Write a JAVA program Illustrating Multiple catch clauses

Exercise – 8 (Runtime Polymorphism)

a). Write a JAVA program that implements Runtime polymorphism

b). Write a Case study on run time polymorphism, inheritance that implements in above

problem

Exercise – 9 (User defined Exception)

a). Write a JAVA program for creation of Illustrating throw

b). Write a JAVA program for creation of Illustrating finally

c). Write a JAVA program for creation of Java Built-in Exceptions

d).Write a JAVA program for creation of User Defined Exception

Exercise – 10 (Threads)

a). Write a JAVA program that creates threads by extending Thread class .First thread display

"Good Morning "every 1 sec, the second thread displays "Hello "every 2 seconds and the

third display "Welcome" every 3 seconds ,(Repeat the same by implementing Runnable)

b). Write a program illustrating isAlive and join ()

c). Write a Program illustrating Daemon Threads.

Exercise - 11 (Threads continuity)

a).Write a JAVA program Producer Consumer Problem

b).Write a case study on thread Synchronization after solving the above producer consumer

problem

Exercise – 12 (Packages)

a). Write a JAVA program illustrate class path

b). Write a case study on including in class path in your os environment of your package.

c). Write a JAVA program that import and use the defined your package in the

previous
Problem

Exercise - 13 (Applet)

a).Write a JAVA program to paint like paint brush in applet.

b) Write a JAVA program to display analog clock using Applet.

c). Write a JAVA program to create different shapes and fill colors using Applet.

EQUIPMENT REQUIRED:

REFERENCE BOOKS:

1. Java The complete reference, 9th edition, Herbert Schildt, McGraw Hill Education (India) Pvt. Ltd.
2. Understanding Object-Oriented Programming with Java, updated edition, T. Budd, Pearson Education.
3. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, John Wiley & sons.
4. Introduction to Java programming, Y. Daniel Liang, Pearson Education.
5. Object Oriented Programming through Java, P. Radha Krishna, Universities Press.
6. Programming in Java, S. Malhotra, S. Chudhary, 2nd edition, Oxford Univ. Press.
7. Java Programming and Object oriented Application Development, R. A. Johnson, Cengage Learning.

E-RESOURCES:

1. https://www.javacodegeeks.com
2. http://programmingbydoing.com
3. https://www.oracle.com/technetwork/java
4. https://www.computerscienceonline.org/cutting-edge/java