

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Bachelor of Technology
Department of Electrical & Electronics Engineering

I B. Tech. – I Semester (E.E.E)

S.No.	Course Code	Subject	L	T	P/Drg	C
1.	16HS601	Functional English	3	-	-	3
2.	16HS602	Engineering Mathematics-I	3	1	-	3
3.	16HS603	Engineering Physics	3	1	-	3
4.	16CS501	Computer Programming	3	1	-	3
5.	16HS606	Human Values & Professional Ethics	3	-	-	3
6.	16HS608	Engineering Physics Lab	-	-	4	2
7.	16CS502	Computer Programming Lab	-	-	4	2
8.	16ME301	Engineering & IT Workshop Lab	-	-	4	2
Contact Periods / Week			15	3	12	21
			Total/Week 30			

I B. Tech. – II Semester (E.E.E)

S.No.	Course Code	Subject	L	T	P	C
1.	16HS610	Professional English	3	-	-	3
2.	16HS611	Engineering Mathematics-II	3	1	-	3
3.	16HS604	Engineering Chemistry	3	1	-	3
4.	16ME302	Engineering Graphics	-	-	6	3
5.	16EE201	Electrical Circuits	3	1	-	3
6.	16HS607	English Language and Communication Skills Lab	-	-	4	2
7.	16HS609	Engineering Chemistry Lab	-	-	4	2
8.	16EE202	Electrical Circuits Lab	-	-	4	2
Contact Periods / Week			12	3	18	21
			Total/Week 33			

II B. Tech. – I Semester (E.E.E)

S.No.	Course Code	Subject	L	T	P	C
1.	16HS612	Engineering Mathematics-III	3	1	-	3
2.	16HS605	Environmental Studies	3	-	-	3
3.	16EE203	Network Analysis & synthesis	3	1	-	3
4.	16EC401	Basic Electronic Devices	3	1	-	3
5.	16EE210	Generation of Electric Power	3	1	-	3
6.	16EE211	Electrical Machines –I	3	1	-	3
7.	16EE204	Network Analysis & synthesis Lab	-	-	4	2
8.	16EC405	Basic Electronic Devices Lab	-	-	4	2
Credit Course						
9.	COE-I	Comprehensive Online Examination-I				1
Audit Course						
10.	16CS503	Data Structures through C	3	-	-	-
Contact Periods / Week			21	5	8	23
			Total/Week 34			

II B. Tech. – II Semester (E.E.E)

S.No.	Course Code	Subject	L	T	P	C
1.	16HS613	Probability & Statistics	3	1	-	3
2.	16CE112	Fluid Mechanics & Hydraulic Machinery	3	1	-	3
3.	16EE214	Electromagnetic Fields	3	1	-	3
4.	16EC411	Analog Electronic Circuits	3	1	-	3
5.	16EE215	Electrical Machines –II	3	1	-	3
6.	16EE217	Electrical Machines-I Lab	-	-	4	2
7.	16EC414	Analog Electronic Circuits Lab	-	-	4	2
8.	16CE116	Fluid Mechanics & Hydraulic Machinery Lab	-	-	4	2
Credit Course						
9.	COE-II	Comprehensive Online Examination-II				1
Audit Course						
10.	16HS614	Comprehensive Soft Skills	3	-	-	-
Contact Periods / Week			18	5	12	22
			Total/Week 35			

*L-Lecture hours, T-Tutorial, P-Practical, Drg: Drawing, C-Credit

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

L	T	C
3	0	3

**(16HS601) FUNCTIONAL ENGLISH
(Common to All Branches)**

Course Objectives:

- To develop communication skills among the students.
- To construct proficiency in academic and social purpose to improve their grammatical accuracy.
- To understand LSRW skills and inculcate the habit of reading for pleasure.
- To obtain study skills and communication skills in formal and informal situations.
- To use appropriate vocabulary

Course Outcomes:

Students will be able to

- Use LSRW skills through the prescribed text and develop their ability to communicate effectively.
- Articulate well among themselves and with Faculty.
- Construct compound sentences using common conjunctions.
- Manage to organize and deliver oral presentations.
- Demonstrate the skills needed to participate in a conversation that builds knowledge collaboratively.

UNIT I

MINDSCAPES (Environmental Consciousness: Pollution - How To Regain Green Cover):

1. Learning English Language through Literature (Secret of work- Swami Vivekananda)
2. Present, Past and Future aspects
3. Introducing oneself

Grammar: Parts of speech-Kinds of sentences-Tenses

Vocabulary: Synonyms & Antonyms-Affixes – Phrasal verbs

Listening & Reading Activities

Writing: Paragraph writing-Note taking & Note making

Phonetics- Syllabification

UNIT II

MINDSCAPES (Emerging Technologies: Solar Thermal Power- Nano Technology):

1. Learning English Language through Literature (Stopping by Woods on a Snowy Evening- Robert Frost)
2. Set in the Past
3. Inter-personal skills Grammar – Articles – Past Events – Voice & Impersonal passive

voice – Gerund & -ing forms
 to-infinitives
 Vocabulary: Phrases – Idioms – word roots
 Listening & Reading Activities
 Writing: Letter writing- Informal- Formal
 Phonetics – Accent

UNIT III

MINDSCAPES (Global Issues: Child Labor- E- Waste):

1. Learning English Language through Literature (What is my Name?-P.Satyavathi)
2. Describing a person, place and object
3. Possibilities
 - Grammar: Modals – Conditionals – Framing Questions – Compound nouns
Verbs
 - Vocabulary: One word substitute– Fixed expressions– Clauses
 - Listening & Reading Activities
 - Writing: Information transfer
 - Intonation: Falling & Rising

UNIT IV

MINDSCAPES (Space Trek: Hubble Telescope- Genesis of ISRO):

1. Learning English Language through Literature (Man in Black-Oliver Goldsmith)
2. Analytical thinking
3. Co-operative learning
 - Grammar: Concord–Reported speech-compare & contrast
 - Vocabulary: Numerical expressions-definitions-collocations
 - Listening & Reading
 - Writing: Summary-Essay writing-Making instructions
 - JAM

UNIT V

MINDSCAPES (Media Matters: History Of Media- Power of Media- Interviews):

1. Learning English Language through Literature (The Power of Prayer-Abdul Kalam)
2. Exploring creative ideas
3. Synthesis of sentences
 - Grammar: Simple, compound and complex-Spotting errors
 - Vocabulary: Discourse markers-Homonyms-Homophones-Homographs
 - Listening & Reading Activities
 - Writing: Writing recommendations-scrambled sentences
 - Convincing others

TEXT BOOKS:

1. *Mindscapes: English for Technologists and Engineers-* Orient Black Swan, 2014.
2. *Paths to Progress in English: Orient Black Swan*

REFERENCES:

1. *Raymond Murphy's Intermediate English Grammar with CD*, Raymond Murphy, Cambridge University Press, 2012.
2. *Communication Skills*, Sanjay Kumar & Pushpalatha, Oxford University Press, 2012.
3. *Writing Tutor. Advanced English Learners' Dictionary*, 9th Edition, Oxford University Press, 2015.
4. *Powerful Vocabulary Builder*, Anjana Agarwal, New Age International Publishers, 2011.
5. *Keep Talking*, F. Klippel, Cambridge University Press, 2013.
6. *Listening Extra*, Miles Craven, Cambridge University Press, 2008.
7. *Reading Extra*, Liz Driscoll, Cambridge University Press, 2004.
8. *Writing Extra*, Graham Palmer, Cambridge University Press, 2004.
9. *Speak Well*, Jayashree Mohanraj et al, Orient Blackswan, 2013.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

L	T	C
3	1	3

**(16HS602) ENGINEERING MATHEMATICS-I
(Common to all Branches)**

Course Objectives:

- To train the students thoroughly in Mathematical concepts of ordinary differential equations, multiple integrals, Laplace Transforms and their applications
- To prepare students for lifelong learning and successful careers using mathematical concepts of ordinary differential equations, multiple integrals, Laplace Transforms and their applications
- To develop the skill pertinent to the practice of the mathematical concepts including the student abilities to formulate and modeling the problems, to think creatively and to synthesize information

Course Outcomes:

- The students become familiar with the application of ordinary differential equations, multiple integrals, Laplace Transforms and their applications
- The students attain the abilities to use mathematical knowledge to analyze, formulate and solve problems with engineering applications

UNIT I

DIFFERENTIAL EQUATIONS: Exact and Non-exact (Integrating factors), Linear and Bernoulli differential equations, Applications to first order equations: Orthogonal Trajectories, Newton's Law of Cooling, Natural Law of Growth and Decay. Linear Differential Equations of second and higher order with constant coefficients. Method of variation of parameters. Applications of linear differential equations- Simple electric circuits.

UNIT II

Taylor's and Maclaurin's Series, Functions of several variables, Jacobian, Maxima and Minima of functions of two variables, Lagrange's method of undetermined Multipliers with three variables only. Radius of curvature.

UNIT III

MULTIPLE INTEGRALS: Evaluation of Double and Triple integrals, Change of order of integration, Change of variables. Simple applications to areas.

UNIT IV

LAPLACE TRANSFORM I: Laplace transforms of standard functions, First shifting Theorem, Transforms of derivatives and integrals, Unit step function, Second shifting theorem, Laplace transforms of Periodic functions.

UNIT V

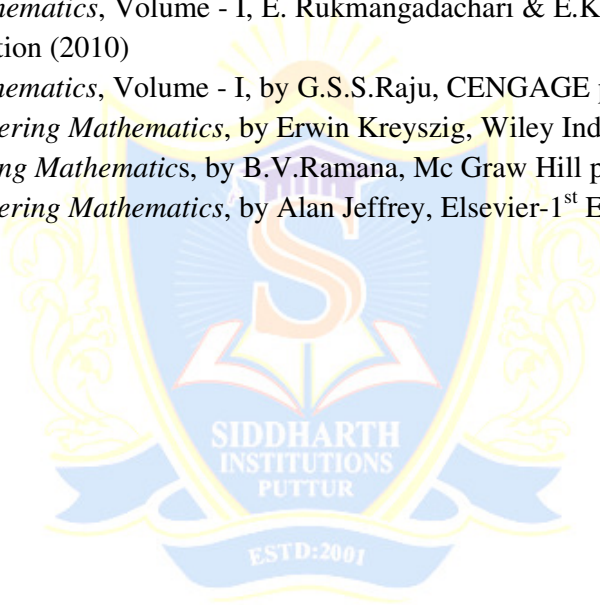
LAPLACE TRANSFORM II: Inverse Laplace Transforms, Convolution theorem, Application of Laplace transforms to ordinary differential equations of first and second order.

TEXT BOOKS:

1. *Higher Engineering Mathematics*, B.S.Grewal, Khanna publishers-42nd Edition (2012).
2. *Engineering Mathematics* Volume-I, by T.K.V. Iyengar, S.Chand publication-12th Edition.

REFERENCES:

1. *Engineering Mathematics*, Volume - I, E. Rukmangadachari & E.Keshava Reddy, Pearson Publisher 1st Edition (2010)
2. *Engineering Mathematics*, Volume - I, by G.S.S.Raju, CENGAGE publisher (2013).
3. *Advanced Engineering Mathematics*, by Erwin Kreyszig, Wiley India-10th Edition (2012).
4. *Higher Engineering Mathematics*, by B.V.Ramana, Mc Graw Hill publishers (2008).
5. *Advanced Engineering Mathematics*, by Alan Jeffrey, Elsevier-1st Edition (2001).



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

L	T	C
3	1	3

**(16HS603) ENGINEERING PHYSICS
(Common to CE, EEE & ME)**

Course Objectives:

- To evoke interest on applications of superposition effects like interference & diffraction, the mechanisms of emission of light, achieving amplification of electromagnetic radiation through stimulated emission, study of propagation of light through transparent dielectric wave guides along with engineering applications.
- To enlighten the periodic arrangement of atoms in crystals, direction of Bragg planes, crystal structure determination by X-rays & non-destructive evaluation using ultrasonic techniques.
- To get an insight into the microscopic meaning of conductivity, classical & quantum free electron model & evaluation of band theory to distinguish materials & to understand electron transport mechanism in solids.
- To open new avenues of knowledge & understanding semiconductor based electronic devices, basic concepts and applications of semiconductors & magnetic materials have been introduced which find potential in the emerging micro device applications.
- To give an impetus on the subtle mechanism of superconductors in terms of conduction of electron pairs using BCS theory, different properties exhibited by them & their fascinating applications. Considering the significance of microminiaturization of electronic devices & significance of low dimensional materials, the basic concepts of nanomaterials, their synthesis, properties & applications in emerging technologies are elicited.

Course Outcomes:

- The different realms of physics and their applications in both scientific and technological systems are achieved through the study of physical optics, lasers and fibre optics.
- The important properties of crystals like the presence of long range order and periodicity, structure determination using X-ray diffraction are focused with defects in crystals & ultrasonic non destructive techniques.
- The discrepancies between the classical estimates & laboratory observations of physical properties exhibited by materials would be lifted through the understanding of quantum picture of subatomic world.
- The electronic and magnetic properties of materials were successfully explained by free electron theory and the bases for the band theory are focused.
- The properties and device applications of semiconducting & magnetic materials are illustrated.
- The importance of superconducting materials and nanomaterials along with their engineering applications are well elucidated.

UNIT I

PHYSICAL OPTICS, LASERS AND FIBRE OPTICS: Physical Optics: Interference - Introduction - Interference in thin films by reflection – Newton’s Rings. Diffraction - Introduction- Fraunhofer diffraction due to single slit and diffraction grating.

LASERS: Introduction - Characteristics of laser – Spontaneous and stimulated emission of radiation –Einstein’s relation, Population inversion – Excitation mechanism & optical resonator – ND: YAG laser - He-Ne laser, semiconductor diode laser -Applications of lasers.

FIBRE OPTICS: Introduction– Construction and working principle of optical fiber – Numerical aperture and acceptance angle – Types of optical fibers – Attenuation and losses in fibers -Optical fiber communication system – Applications of optical fibers in communications, sensors and medicine.

UNIT II

CRYSTALLOGRAPHY, ACOUSTICS AND ULTRASONICS: Crystallography: Introduction – Space lattice –Unit cell – Lattice parameters –Bravais lattice –Crystal systems – Packing fractions of SC, BCC and FCC-Directions and planes in crystals – Miller indices – Inter planar spacing in cubic crystals – X-ray diffraction - Bragg’s law.

Acoustics Intensity – Absorption coefficient and its determination –Reverberation – Reverberation time (qualitative treatment) – Factors affecting acoustics of buildings and their remedies. Ultrasonics Introduction – Production of ultrasonics by piezoelectric method – Properties and detection – Applications in non-destructive testing.

UNIT III

QUANTUM MECHANICS AND FREE ELECTRON THEORY: Quantum Mechanics: Introduction to matter waves – de’Broglie hypothesis - Heisenberg’s uncertainty principle and its applications - Schrödinger’s time independent and time dependent wave equation – Significance of wave function - Particle in a one dimensional infinite potential well .

Free Electron theory: Classical free electron theory - Equation for electrical conductivity - Quantum free electron theory - Origin of bands in solids – Classification of solids into conductors, semiconductors and insulators.

UNIT IV

SEMICONDUCTORS AND MAGNETIC MATERIALS: Semiconductor Physics: Introduction – Intrinsic and extrinsic semiconductors (qualitative treatment), Drift & diffusion currents - Einstein’s relation– Hall effect Direct & indirect band gap semiconductors. Magnetic materials: Introduction and basic definitions – Origin of magnetic moments – Bohr magneton – Classification of magnetic materials into dia, para, ferro, antiferro and ferri magnetic materials – Hysteresis - Soft and hard magnetic materials and applications.

UNIT V

SUPERCONDUCTIVITY AND PHYSICS OF NANOMATERIALS: Superconductivity: Introduction – Meissner effect - Properties of superconductors- Type I and Type II superconductors- ac and dc Josephson effects BCS theory (qualitative) –Applications of

superconductors. Physics of Nanomaterials: Introduction - Significance of nanoscale - Surface area and quantum confinement –Synthesis of nanomaterials: ball mill, chemical vapour deposition, sol-gel, plasma arcing –applications of nano materials

TEXT BOOKS:

1. *Engineering Physics* – K.Thyagarajan, 5th Edition, MacGraw Hill Publishers, NewDelhi, 2014.
2. *Engineering Physics* - Gaur R.K. and Gupta S.L. Dhanpat Rai Publishers, 2009

REFERENCES:

1. *Engineering Physics* - Mani Naidu S.,Pearson Publications, 2011.
2. *Engineering Physics* - Arumugam K.-PHI Learning Pvt., India, 2009.
3. *Engineering Physics* -Palanisamy P.K, SCITECH Publications, 2011.
4. *Engineering Physics* -Rajagopal K. PHI, New Delhi, 2011.
5. *Engineering Physics* – Dr. M.N. Avadhanulu & Dr. P.G. Kshirsagar, 10th Edition,S.Chand and Company, New Delhi, 2014



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

L	T	C
3	1	3

**(16CS501) COMPUTER PROGRAMMING
(Common to all Branches)**

Course Objectives:

- To understand the core aspects of computer problem solving techniques
- To understand the programming language constructs
- To understand the programming paradigms

Course Outcomes:

- Able to design the flowchart and algorithm for real world problems
- Able to learn and understand new programming languages
- Able to construct modular and readable programs
- Able to write C programs for real world problems using simple and compound data types

UNIT I

OVERVIEW OF COMPUTERS AND PROGRAMMING: Electronic Computers Then and Now – Computer Hardware - Computer Software - Algorithms - Flowcharts - Software Development Method - Applying the Software Development Method. C Language Elements- Variable Declarations & Data Types Executable Statements – General form of a C Program- Expressions - Precedence and Associativity- Operators and Expression – Type Conversions

UNIT II

DECISION STATEMENTS: If Statement, If-else Statement, Nested- If-else Statement, Else if Ladder, Switch case – break – continue – go to Statements – Example Programs Loop Control Statements – for loop – while loop - do while – Example Programs

UNIT III

ARRAYS: Declaring and referencing Arrays – Array Subscripts, Using for loops for sequential access – Using Array elements as Function arguments – Array arguments – Multidimensional Arrays – Example Programs

STRINGS: Introduction – Declaring and Initializing String variables – Reading Strings from Terminals – Writing Strings to Screen – Arithmetic Operations on Characters – Putting Strings together – Comparison of two Strings – String Handling Functions – Table of Strings- Other Features of Strings.

UNIT IV

FUNCTIONS: Definition – Function without Arguments – Functions with input arguments – Functions with simple output parameters – Communication among Functions – Scope – Storage clauses – Type Qualifiers – Recursion

Pointers: Introduction – Understanding Pointers – Accessing the address of a variable – Declaring Pointers variables- Initialization of Pointer variables – Accessing a variable through its Pointer – Chain of Pointers – Pointer Expressions – Pointer Increment & Scale Factors – Pointers and Arrays – Pointers and Character Strings – Array of Pointers – Pointers as Function Arguments .- Function returning Pointers – Pointers to Function.

UNIT V

STRUCTURES: Introduction – Defining a Structure – Declaring Structure Variables – Accessing Structure Members – Structure Initialization – Copying and Comparing Structure variables – Operations on Individual members – Arrays of Structures – Arrays with in Structures – Structures with in Structures – Structures and Functions – Unions –Bit fields – TYPEDEF – ENUM

File Management in C: Introduction – Types of Files – Defining and Opening a File – Closing a File – Input / Output Operations on Files – Error handling during IO Operations – Random access to files – Command line arguments. Preprocessor - #define and #include.

TEXT BOOKS:

1. Programming in C and Data Structures – Jeri R. Hanly, Elliot B Koffman, Ashok Kamthane, A Anand Rao – Pearson.(UNITS I, II and III)
2. Programming in C and Data Structures – E Balagurusamy - McGrawHill

REFERENCES:

1. Computer Fundamentals and C Programming - Dr. P. Chenna Reddy, ISBN: 9789351045885, Publisher: Pothi.com
2. Programming in C, Second Edition – Pradip Dey, Manas Ghosh, Oxford University Press.
3. “C from Theory to Practice”- George S. Tselikis- Nikolaos D. Tselikas- CRC Press.
4. “Programming with C”- R S Bichkar- University Press.
5. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A.Ananda Rao, Pearson Education. (UNIT-I)

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

L	T	C
3	0	3

**(16HS606) HUMAN VALUES AND PROFESSIONAL ETHICS
(Common to CE, EEE & ME)**

Course Objectives:

- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.

Course Outcomes:

Students undergoing this course are able to

- Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society

.UNIT I

Human Values - Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self-confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II

Engineering Ethics - Senses of 'Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories

UNIT III

Engineering As Social Experimentation - Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

UNIT IV

Safety, Responsibilities And Rights- Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk
Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination

UNIT V

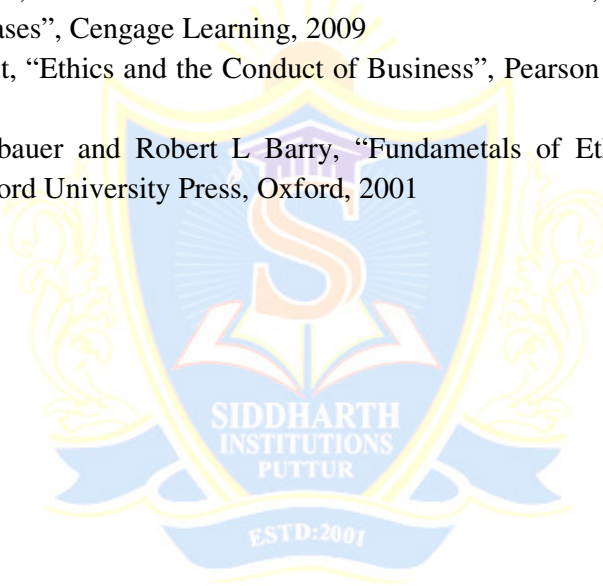
Global Issues-Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership –Code of Conduct – Corporate Social Responsibility

TEXTBOOKS:

1. Mike W. Martin and Roland Schinzinger, “Ethics in Engineering”, Tata McGraw Hill, New Delhi, 2003.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, “Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.

REFERENCES:

1. Charles B. Fleddermann, “Engineering Ethics”, Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, “Engineering Ethics – Concepts and Cases”, Cengage Learning, 2009
3. John R Boatright, “Ethics and the Conduct of Business”, Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, “Fundamentals of Ethics for Scientists and Engineers”, Oxford University Press, Oxford, 2001



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

**P C
4 2**

**(16HS608) ENGINEERING PHYSICS LABORATORY
(Common to CE, EEE & ME)**

Course Objectives:

- Will recognize the important of optical phenomenon like interference and diffraction.
- Will understand the role of optical fibre parameters and signal losses in communication.
- Will recognize the importance of energy gap in the study of conductivity and Hall- Effect in a semiconductor.
- Will understand the application of B-H curve.
- Will acquire a practical knowledge of studying the crystal structure in terms lattice constant.
- Will recognize the application of laser in finding the particle size and its role in diffraction studies.
- Will learn to synthesis of the nanomaterials and recognize its importance by knowing its nano particle size and its impact on its properties.

Course Outcomes:

- Would recognize the importance of optical phenomenon like interference and diffraction.
- Would have acquired the practical application knowledge of optical fibre, semiconductor, dielectric and magnetic materials, crystal structure and lasers by the study of their relative parameters.
- Would recognize the significant importance of nanomaterials in various engineering fields.

Any 10 of the following experiments has to be performed during the I year II Sem.

1. Determination of radius of curvature of a Plano-convex lens by forming Newton's rings.
2. Determination of wavelength of given source using diffraction grating in normal incidence method.
3. Determination of Numerical aperture, acceptance angle of an optical fiber.
4. Determination of the Energy gap of a Semiconductor diode.
5. Hall-Effect – Determination of mobility of charge carriers.
6. B-H curve – Determination of hysteresis loss for a given magnetic material.
7. Determination of Crystallite size using X-ray pattern (Powder) using Debye- Scheerer method.
8. Determination of particle size by using laser source.
9. Determination of dispersive power of a prism.
10. Determination of thickness of the thin wire using wedge Method.
11. Laser: Diffraction due to single slit.
12. Laser: Diffraction due to double slit.
13. Laser: Determination of wavelength using diffraction grating.
14. Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.
15. Synthesis of nano material by any suitable method.

REFERENCES:

1. *Engineering Physics Practicals* – NU Age Publishing House, Hyderabad.
2. *Engineering Practical Physics* – Cengage Learning, Delhi.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

P	C
4	2

**(16CS502) COMPUTER PROGRAMMING LAB
(Common to all Branches)**

Course Objectives:

- To make the student learn C Programming language.
- To make the student solve problems, implement those using C & C++ programming languages.
- To strengthen the ability to identify and apply the suitable data structure for the given real world problem.

Course Outcomes:

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

- Apply problem solving techniques of C to find solution.
- Use C language features effectively to implement solutions.
- Use C++ language features effectively to solve problems.
- Identify and develop apt searching and sorting technique for a given problem.
- Identity, design and develop the appropriate data structure for a given problem or application.

LIST OF EXPERIMENTS/TASKS:

1. Practice DOS and LINUX Commands necessary for design of C Programs.
2. Practice programs: Finding the sum of three numbers, exchange of two numbers, maximum of two numbers, to read and print variable values of all data types of C language, to find the size of all data types, to understand the priority and associativity of operators using expressions, to use different library functions of C language.
3. Write a program to find the roots of a Quadratic equation.
4. Write a program to compute the factorial of a given number.
5. Write a program to check whether the number is prime or not.
6. Write a program to find the series of prime numbers in the given range.
7. Write a program to generate Fibonacci numbers in the given range.
8. Write a program to find the maximum and minimum of a set of numbers.
9. Write a program to reverse the digits of a number.
10. Write a program to find the sum of the digits of a number.
11. Write a program to find the sum of positive and negative numbers in a given set of numbers.
12. Write a program to check for number palindrome.
13. Write a program to evaluate the sum of the following series up to n terms

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots$$
14. Write a program to generate Pascal Triangle.
15. Write a program to read two matrices and print their sum and product in the matrix form.

16. Write a program to read matrix and perform the following operations.
 - i. Find the sum of Diagonal Elements of a matrix.
 - ii. Print Transpose of a matrix.
 - iii. Print sum of even and odd numbers in a given matrix.
17. Write a program to accept a line of characters and print the number of Vowels, Consonants, blank spaces, digits and special characters.
18. Write a program to insert a substring in to a given string and delete few characters from the string. Don't use library functions related to strings.
19. Write a program to split a „file“ in to two files, say file1 and file2. Read lines into the file from standard input. File1 should consist of odd numbered lines and file2 should consist of even numbered lines.
20. Write a program to merge two files.
21. Write a program to read a set of strings and sort them in alphabetical order.
22. Write a program to read two strings and perform the following operations without using Built in string Library functions and by using your own implementations of functions.
 - i. String length determination
 - ii. Concatenate them, if they are not equal
 - iii. Compare Two Strings
 - iv. String reversing
23. Write programs using recursion for finding Factorial of a number, GCD, LCM, and solving Towers of Hanoi problem.
24. Write a program to exchange two numbers using pointers.
25. Write a program to read student records into a file. Record consists of roll no, name and Marks of a student in six subjects and class. Class field is empty initially. Compute the class of a student. The calculation of the class is as per JNTUA rules. Write the first class, second class, third class and failed students lists separately to another file.
26. A file consists of information about employee salary with fields employee id, name, Basic, HRA, DA, IT, other-deductions, Gross and Net salary. Initially only employee id, name, and basic have valid values. HRA is taken as 10% of the basic, DA is taken as 80% of basic, IT is 20% of the basic, other deductions are user specified. Compute the Gross and Net salary of the employee and update the file.
27. Write a program to perform Base (decimal, octal, hexadecimal,...) conversions.
28. Write a program to find the square root of a number without using built-in library function.
29. Write C program to convert a string to number.
30. Write C program to generate multiplication tables from 11 to 20.

REFERENCES:

1. How to Solve it by Computer, R.G. Dromey, Pearson.
2. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, Pearson.
3. Let us C Yeswant Kanetkar, BPB publications
4. Pointers in C, Yeswant Kanetkar, BPB publications.
5. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A.Ananda Rao, Pearson Education.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – I Sem. (E.E.E)

P	C
4	2

**(16ME301) ENGINEERING & IT WORK SHOP LAB
(Common to CE, EEE & ME)**

Course Educational Objectives:

ENGINEERING WORKSHOP

- The course provides hands-on training in the trades of Carpentry, Fitting, House-wiring, Tin Smithy, Foundry. Overview of metal cutting processes, plumbing and welding is provided through live demonstrations.

IT WORKSHOP

- This course deals with practice sessions on PC hardware, Internet, World Wide Web, MS-Word, Excel, Power Point and Publisher. Demonstrations on installations of system software such as MS-Windows, Linux and device drivers, hardware and software troubleshooting, and protecting the personal computer from viruses and other cyber-attacks are include.

Course Outcomes:

ENGINEERING WORKSHOP

After completion of this course, a successful student will be able to :

- Utilize workshop tools for engineering practice.
- Employ skills for the production a component for real time applications.
- Appreciate the hard work and intuitive knowledge of the manual workers.

IT WORKSHOP

After completion of this course, a successful student will be able to:

- Can install the softwares in the computers
- Utilize skills for the development of application softwares
- Can protect personal computer from virus and other cyber attacks

LIST OF EXPERIMENTS

1. TRADES FOR EXERCISES

- a. Carpentry shop:** Two joints (exercises) involving tenon and mortising, groove and tongue: Making middle lap T joint, Cross lap joint, Mortise and tenon T joint, Bridle T joint from soft wood stock.

- b. Fitting shop:** Two joints (exercises) from: Square joint, V joint, Half round joint or Dove tail joint out of 100 x 50 x 5 mm M.S. stock.
- c. Sheet metal shop:** Two jobs (exercises) from: Tray, Cylinder, Hopper or Funnel from out of 22 or 20 gauge G.I. sheet.
- d. House-wiring:** Two jobs (exercises) from: Wiring for ceiling rose and two lamps (bulbs) with independent switch, two way switch, controls with or without looping, wiring for stair case lamp, wiring for water pump with single phase starter.
- e. Foundry:** Preparation of two moulds (exercises): for a single pattern and a double pattern.
- f. Welding:** Preparation of two welds (exercises): Single V butt joint, Lap joint, Double V butt joint or T fillet joint.

2. TRADES FOR DEMONSTRATION:

- a. Plumbing**
b. Machine Shop
c. Metal Cutting

Apart from the above the shop rooms should display charts, layouts, figures, circuits, hand tools, hand machines, models of jobs, materials with names such as different woods, wood faults, Plastics, steels, meters, gauges, equipment, CD or DVD displays, First aid, shop safety etc. (though they may not be used for the exercises but they give valuable information to the student). In the class work or in the examination knowledge of all shop practices may be stressed upon rather than skill acquired in making the job.

REFERENCES:

1. Engineering Work shop practice for JNTU, V. Ramesh Babu, VRB Publishers Pvt. Ltd., 2009
2. Work shop Manual, P.Kannaiah & K.L.Narayana, SciTech Publishers.
3. Dictionary of Mechanical Engineering, GHF Nayler, Jaico Publishing House.

IT WORKSHOP

LIST OF EXPERIMENTS

1. Preparing your Computer Knowledge (5 weeks)
2. **Learn about Computer:** Identify the internal parts of a computer, and its peripherals. Represent the same in the form of diagrams including Block diagram of a computer. Write specifications for each part of a computer including peripherals and specification of Desktop computer. Submit it in the form of a report.
3. **Assembling a Computer:** Disassemble and assemble the PC back to working condition. Students should be able to trouble shoot the computer and identify working and non-working

parts. Student should identify the problem correctly by various methods available (eg: beeps). Students should record the process of assembling and trouble shooting a computer.

4. Install Operating system: Student should install Linux on the computer. Student may install another operating system (including proprietary software) and make the system dual boot or multi boot. Students should record the entire installation process.

5. Operating system features: Students should record the various features that are supported by the operating system(s) installed. They have to submit a report on it. Students should be able to access CD/DVD drives, write CD/DVDs, access pen drives, print files, etc. Students should install new application software and record the installation process.

6 Networking and Internet (4 weeks)

6.1 Networking: Students should connect two computers directly using a cable or wireless connectivity and share information. Students should connect two or more computers using switch/hub and share information. Crimping activity, logical configuration etc should be done by the student. The entire process has to be documented.

6.2 Browsing Internet: Student should access the Internet for Browsing. Students should search the Internet for required information. Students should be able to create e-mail account and send email. They should get acquaintance with applications like Facebook, skype etc. If Intranet mailing facility is available in the organization, then students should share the information using it. If the operating system supports sending messages to multiple users (LINUX supports it) in the same network, then it should be done by the student. Students are expected to submit the information about different browsers available, their features, and search process using different natural languages, and creating e-mail account.

7. Antivirus: Students should download freely available Antivirus software, install it and use it to check for threats to the computer being used. Students should submit information about the features of the antivirus used, installation process, about virus definitions, virus engine etc

8. Productivity tools (6 weeks)

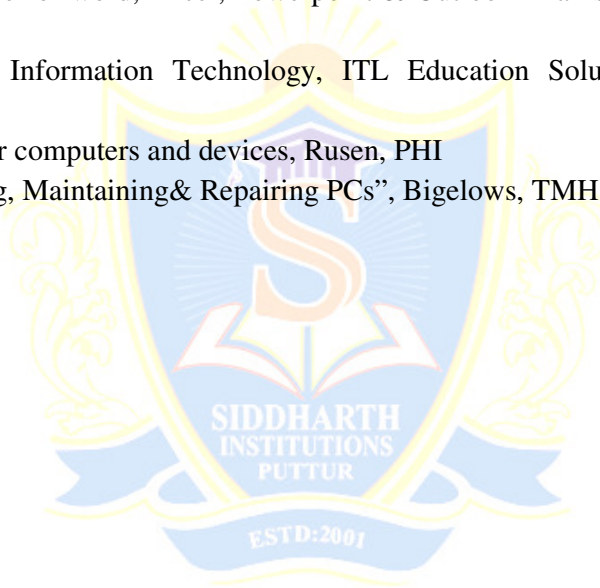
8.1 Word Processor: Students should be able to create documents using the word processor tool. Some of the tasks that are to be performed are inserting and deleting the characters, words and lines, Alignment of the lines, Inserting header and Footer, changing the font, changing the color, including images and tables in the word file, making page setup, copy and paste block of text, images, tables, linking the images which are present in other directory, formatting paragraphs, spell checking, etc. Students should be able to prepare project cover pages, content sheet and chapter pages at the end of the task using the features studied. Students should submit a user manual of the word processor considered.

8.2 Spreadsheet: Students should be able to create, open, save the application documents and format them as per the requirement. Some of the tasks that may be practiced are Managing the worksheet environment, creating cell data, inserting and deleting cell data, format cells, adjust the cell size, applying formulas and functions, preparing charts, sorting cells. Students should submit a user manual of the Spreadsheet application considered.

8.3 Presentations: Creating, opening, saving and running the presentations, selecting the style for slides, formatting the slides with different fonts, colors, creating charts and tables, inserting and deleting text, graphics and animations, bulleting and numbering, hyperlinking, running the slide show, setting the timing for slide show. Students should submit a user manual of the Presentation tool considered.

REFERENCES:

1. Introduction to Computers, Peter Norton, Mc Graw Hill
2. MOS study guide for word, Excel, Powerpoint & Outlook Exams”, Joan Lambert, Joyce Cox, PHI.
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. Networking your computers and devices, Rusen, PHI
5. Trouble shooting, Maintaining& Repairing PCs”, Bigelows, TMH



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

L	T	C
3	0	3

**(16HS610) PROFESSIONAL ENGLISH
(Common to All Branches)**

Course Description: The course content focuses on LSRW skills and vocabulary building to enrich their command over language. Relevant task based activities are also carried out to enhance their communication skills.

Course Objectives:

- To develop communication skills among the students
- To construct proficiency in academic and social purpose.
- To improve their grammatical accuracy.
- To understand LSRW skills and inculcate the habit of reading for pleasure.

Course Outcomes:

Students will be able to

- Use LSRW skills through the prescribed text and develop their ability to communicate effectively.
- Articulate well among themselves and with Faculty.
- Construct compound sentences using common conjunctions.
- Manage to organize and deliver oral presentations.
- Demonstrate the skills needed to participate in a conversation that builds knowledge collaboratively

UNIT I

MINDSCAPES (Lessons From the past: Importance of the Past)

1. Learning English Language through Literature (*Playing the English Gentleman*
M.K.Gandhi)
2. Oral presentation
3. Effective writing
 - Grammar: Relative clauses-Adjectives
 - Vocabulary: Sequencing words
 - Listening & Reading Activities
 - Writing: Analytical paragraph writing-Minutes of meeting

UNIT II

MINDSCAPES (Energy: Renewable and Non-renewable Sources - Alternative Sources)

1. Learning English Language through Literature. (*The Portrait of a Lady* -Kushwant Singh)
2. Preparing and presenting slides, Telephone etiquette

3. Making drafts

Grammar: Adverbs - prepositions -cause and effect expressions

Vocabulary: phrasal verbs - Technical vocabulary-Extended definitions

Listening & Reading Activities

Writing: Report writing

UNIT III**MINDSCAPES (Engineering Ethics: Biotechnology - Protection from Natural Calamities)**

1. Learning English Language through Literature (*La Belle Dame Sans Mercy*-John Keats)

2. Poster presentation, Debate

3. Technical drafting

Grammar: Using connectives-Gap filling exercise using appropriate tense form

Vocabulary: Acronyms & Abbreviations

Listening & Reading Activities

Writing: Writing projects

UNIT IV**MINDSCAPES (Travel and Tourism: Atithi Devo Bhava- Tourism in India)**

1. Learning English Language through Literature (*A Marriage Proposal*-Anton Chekov)

2. Group Discussion

3. Reading comprehension

Grammar: Structure indicating purpose-Subject-verb agreement

Vocabulary: emoticons-cloze test

Listening & Reading

Writing: Intensive and extensive

UNIT V**MINDSCAPES (Getting Job Ready: SWOT Analysis- Preparing for Interviews)**

1. Learning from Literature (*Bird Sanctuary* -Sarojini Naidu)

2. Interview etiquette

3. Job application

Grammar: Spotting errors, Gap filling exercises using “gerunds” & present participle forms

Vocabulary: verbal ability

Listening & Reading Activities

Writing: Covering letter, Resume, Curriculum vitae

Convincing others

TEXT BOOKS:

1. *Mindscapes: English for Technologists and Engineers*, Orient Blackswan, 2014
2. *Paths to Progress in English*: Orient Black Swan

REFERENCES:

1. *Effective Tech Communication*, Rizvi, Tata McGraw-Hill Education, 2007.
2. *Technical Communication*, Meenakshi Raman, Oxford University Press.
3. *English Conversations Practice*, Grant Taylor, Tata Mc GrawHill publications,2013.
4. *Practical English Grammar*, Thomson and Martinet, OUP, 2010.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

L	T	C
3	1	3

**(16HS611) ENGINEERING MATHEMATICS-II
(Common to all Branches)**

Course Objectives:

- To train the students thoroughly in Mathematical concepts of Matrices, Vector calculus, Fourier series, Fourier transforms and Partial differential equations
- To prepare students for lifelong learning and successful careers using mathematical concepts of Matrices, Vector calculus, Fourier series, Fourier transforms and Partial differential equations
- To develop the skill pertinent to the practice of the mathematical concepts including the Student abilities to formulate and modeling the problems, to think creatively and to Synthesize information

Course Outcomes:

- The students become familiar with the application of Matrices, Vector calculus, Fourier series, Fourier transforms and Partial differential equations
- The students attain the abilities to use mathematical knowledge to analyze, formulate and solve problems with engineering applications

UNIT I

MATRICES: Rank of a matrix, Echelon form, Normal form, Consistency of system of linear equations (Homogenous and Non-homogeneous), Eigen values, Eigen vectors, Cayley Hamilton theorem (Only statement) and its applications. Quadratic forms, Diagonalization.

UNIT II

VECTOR CALCULUS: Gradient, Divergence, Curl of a vector and related properties, Line, Surface and Volume integrals, Green's, Stoke's and Gauss divergence theorems (Only statement) and its applications.

UNIT III

FOURIER SERIES: Determination of Fourier coefficients- Fourier series- Even and odd functions, Fourier Series in an arbitrary interval, Periodic function, Half range sine and cosine series, Harmonic Analysis.

UNIT IV

Fourier integral theorem (only statement), Fourier sine and cosine integrals. Fourier transform, Fourier sine and cosine transforms, properties, Inverse transforms, Finite fourier transforms.

UNIT V

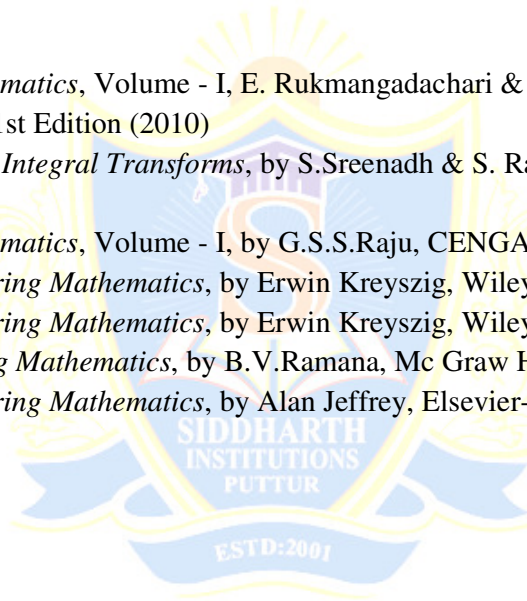
Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions, Method of separation of variables, Solution of one dimensional wave equation, Heat equation and two dimensional Laplace equation under initial and boundary conditions.

TEXT BOOKS:

1. *Higher Engineering Mathematics*, B.S.Grewal, Khanna publishers
2. *Engineering Mathematics Volume-I*, by T.K.V. Iyengar, S.Chand publication
3. *Mathematical Methods* by T.K.V. Iyengar, S.Chand publication

REFERENCES:

1. *Engineering Mathematics*, Volume - I, E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher 1st Edition (2010)
2. *Fourier Series and Integral Transforms*, by S.Sreenadh & S. Ranganatham, S.Chand Publication (2014)
3. *Engineering Mathematics*, Volume - I, by G.S.S.Raju, CENGAGE publisher.(2013)
4. *Advanced Engineering Mathematics*, by Erwin Kreyszig, Wiley India-10th Edition (2012)
5. *Advanced Engineering Mathematics*, by Erwin Kreyszig, Wiley India-10th Edition (2012)
6. *Higher Engineering Mathematics*, by B.V.Ramana, Mc Graw Hill publishers (2008)
7. *Advanced Engineering Mathematics*, by Alan Jeffrey, Elsevier-1st Edition (2001)



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

L	T	C
3	1	3

**(16HS604) ENGINEERING CHEMISTRY
(Common to CE, EEE & ME)**

Course Objectives:

- The Engineering Chemistry course for undergraduate students is framed to strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial/engineering applications.
- The course main aim is to impart in-depth knowledge of the subject and highlight the role of chemistry in the field of engineering.
- The lucid explanation of the topics will help students understand the fundamental concepts and apply them to design engineering materials and solve problems related to them. An attempt has been made to logically correlate the topic with its application.
- The extension of fundamentals of electrochemistry to energy storage devices such as commercial batteries and fuel cells is one such example.
- After the completion of the course, the student would understand the concepts of chemistry and apply to various materials for engineering applications.

Course Outcomes:

The student is expected to:

- Differentiate between hard and soft water. Understand the disadvantages of using hard water domestically and industrially. Select and apply suitable treatments domestically and industrially.
- Understand the electrochemical sources of energy
- Understand industrially based polymers, various engineering materials.
- Understand characteristics and applications of fuels and Lubricants.

UNIT I

ELECTROCHEMISTRY, CELL & CORROSION: Electrolytes- Strong and Weak electrolytes- Definition- examples. Electrolysis - Industrial applications of electrolysis. Cell- Galvanic cell, Batteries- Rechargeable batteries (Lead acid, Ni-Cd, Lithium Ion Batteries), Fuels cells - (Hydrogen-Oxygen and Methanol-Oxygen). Corrosion- Introduction, type of corrosion (Concentration cell corrosion, Galvanic corrosion), Chemical (Dry) and Electrochemical (Wet) Theory of corrosion, Galvanic series, factors affecting the corrosion (Metal and environment) Prevention- Cathodic protection (Sacrificial anode and impressed current), electroplating (Copper, nickel and chromium) and electroless plating (Copper and nickel).

UNIT II

WATER AND ITS TREATMENT: Hardness of water and its Units, Estimation of hardness by EDTA method.

Troubles of Boilers: Scale & Sludge, Priming and Foaming, and Boiler Corrosion.

Treatment of Boiler Feed water:

Internal Treatment: Colloidal, Phosphate, Carbonate, Calgon and sodium aluminate treatment.

External Treatment: Ion-Exchange and Permutit processes.

UNIT III

FUEL TECHNOLOGY AND LUBRICANTS: Fuel Technology- Introduction, classification, characteristics of a good fuel, calorific value, liquid fuels, petroleum, refining of petroleum, knocking, octane number, cetane number, power alcohol, synthetic petrol, gaseous fuels, important gaseous fuels.

Lubricants – Definition, functions of lubricants, mechanism of lubrication, properties of lubricants – viscosity, flash and fire points, cloud and pour points, aniline points, neutralization number and mechanical strength.

UNIT IV

POLYMERS: Introduction- Basic concepts of polymerization, types of polymerization (Chain Growth – Addition, step growth (Condensation), Mechanism: Cationic, anionic, free radical and coordination covalent.

Plastomers – Thermosetting and thermoplastics, preparation, properties and engineering applications of PVC, Teflon, Bakelite and nylons.

Elastomers – Natural rubber, processing of natural rubbers, compounding of rubber.

Synthetic rubber- Preparation, properties and engineering applications of Buna-S, Buna-N, polyurethane, polysulfide (Thiokol) rubbers.

Conducting polymers- mechanism, synthesis and applications of polyacetylene, polyaniline.

Inorganic polymers: Basic introduction, silicones, polyphosphazines applications.

UNIT V

ENGINEERING MATERIALS: Cement- composition of Portland cement, preparation (dry and wet process) setting and hardening of cement.

Refractories – introduction, classification, properties and applications.

Nanomaterials – Introduction-Carbon Nano Tubes, Fullerenes. Semi conductors, superconductors and quantum dots.

TEXT BOOKS:

1. *Engineering Chemistry*, First Edition, Jayaveera KN, Subba Reddy GV and Ramachandraiah C, McGraw Hill Higher Education, New Delhi, 2013.
2. *A Text Book of Engineering Chemistry*, 15th Edition, Jain and Jain, Dhanapathi Rai Publications, New Delhi, 2013.

REFERENCES:

1. *A Text book of Engineering Chemistry*, 12th Edition, SS Dhara, Uma, S. Chand Publications, New Delhi, 2010.
2. *Engineering Chemistry*, First edition, Chandra Sekhar K B, Das U N and Sujatha Mishra, SCITECH Publications India Pvt. Limited, 2010.
3. *Engineering Chemistry*, First edition, Seshamaheswaramma K and Mridula Chugh, Pearson Education, 2013.
4. *Concise Inorganic Chemistry*, 7th Edn, Lee J.D., Blackwel Science Publications Oxford, London, 2004.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

L	T	D	C
0	0	6	3

**(16ME302) ENGINEERING GRAPHICS
(Common to CE, EEE & ME)**

Course Objectives:

- To familiarize the students in basic concept of conic sections, projections and developments of Objects.
- To develop the imagination and drafting skills of students.

Course Outcomes:

Students undergoing this course are able to

- Frame ideas based on the conceptual modeling and design
- Provide good understanding of the methods involved in preparing various views in engineering drawings
- Can prepare 2D and 3D diagrams of various objects

INTRODUCTION (Not to be included for examination)

Drawing instruments and their use – Lettering - Dimensioning – Simple Geometrical constructions.

UNIT I

CONIC SECTIONS: Construction of Ellipse, Parabola, Hyperbola (General and special methods). Special Curves: Cycloids, Involutes.

UNIT II

POINTS: Projections of points

LINES: Projections of straight lines - Determination of true lengths and true inclinations – line inclined to both reference planes., traces.

UNIT III

PLANES: Projections of planes – Surface inclined to both reference planes

SOLIDS: Projections of simple solids (Prisms, pyramids, cylinder and cone) - Axis inclined to both the planes.

UNIT IV

SECTIONS: Sections of solids (prisms, pyramids, cylinder and cone) in simple vertical position by using cutting plane inclined to one reference plane and perpendicular to the other – true shape of the section.

DEVELOPMENTS: Development of lateral surfaces of simple and truncated solids – prisms, pyramids, cylinder and cone.

UNIT V

ISOMETRIC AND ORTHOGRAPHIC PROJECTIONS: Principles of Isometric projection- Isometric Scale- Isometric Views- Conversion of Isometric to orthographic views– Isometric projection of simple solids (Cube, Cylinder and Cone)

INTERPENETRATION/INTERSECTIONS OF SOLIDS: Simple solids.

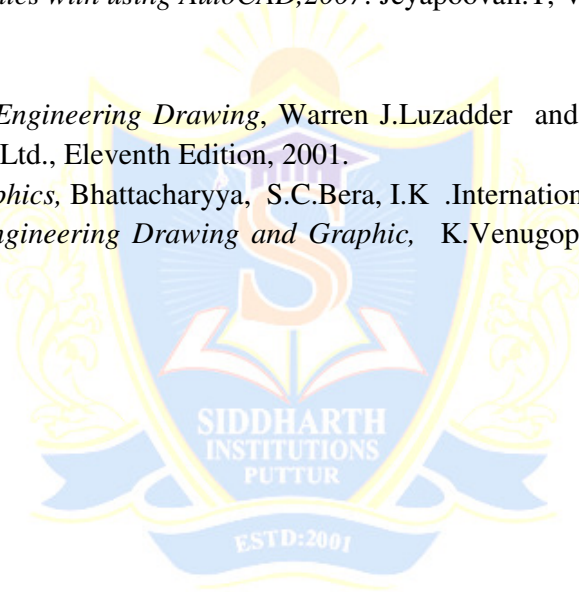
COMPUTER AIDED DRAFTING: Introduction to drafting packages - orthographic views and projections and Isometric projections (demonstration only)

TEXT BOOKS:

1. *Engineering Drawing*, N.D.Bhatt, Charotar Publishers
2. *A text Book of Engineering Drawing*, K.L.Narayana, Kanniah, Scitech Publishers, 2010
3. *Engineering Graphics with using AutoCAD,2007*. Jeyapooan.T, Vikas Publishing House

REFERENCES:

1. *Fundamentals of Engineering Drawing*, Warren J.Luzadder and Jon. M.Duff Prentice Hall of India Pvt., Ltd., Eleventh Edition, 2001.
2. *Engineering Graphics*, Bhattacharyya, S.C.Bera, I.K .International Pvt Ltd. 2009.
3. *A text Book of Engineering Drawing and Graphic*, K.Venugopal New Age Publishing New Delhi, 2008,



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

L	T	C
3	1	3

(16EE201) ELECTRICAL CIRCUITS

Course Objectives:

- To understand the nature of different circuit elements, fundamental laws and network theorems, Electrical Circuit analysis which is the foundation for all subjects of the Electrical Engineering discipline
- To understand about phasor concepts of single phase and Magnetic circuits.
- To understand the concepts of Network topology, Locus diagrams and Resonance.

Course Outcomes:

- After completing the course, the student should be able to do the following:
- Given a network, find the equivalent impedance by using network reduction techniques
- Given a circuit and the excitation, determine the real power, reactive power, power factor etc.,
- Determine the current through any element and voltage across any element
- Apply the network theorems suitably

UNIT-I:

INTRODUCTION

Circuit concept R,L,C parameters, Voltage and Current sources, Independent and dependent sources, source transformation, Voltage-current relationship for passive elements (for different input signals, Square, ramp, saw tooth, triangular).

Kirchhoff's laws, network reduction techniques, series, parallel, series parallel, star-delta or delta-star transformation, Nodal analysis, Mesh analysis, Super node and super mesh for DC excitations.

UNIT-II:

AC CIRCUITS

R.M.S, Average values and form factor for different periodic waveforms, phase and phase difference of sinusoidal alternating quantities, steady state analysis of R, L and C (in series, parallel and series parallel combinations) with sinusoidal excitation, concept of reactance, impedance, susceptance and admittance, Power triangle, power factor.

UNIT-III

LOCUS DIAGRAMS AND RESONANCE

Locus diagrams, series R-L, R-C, R-L-C and parallel combination with variation of various parameters, Resonance, series, parallel circuits, concept of bandwidth and Q factor.

UNIT-IV

MAGNETIC CIRCUITS

Magnetic circuits, Faraday's laws of electromagnetic induction, concept of self and mutual inductance, dot convention, coefficient of coupling, composite magnetic circuit, Analysis of series and parallel magnetic circuits.

UNIT-V**NETWORK THEOREMS**

Thevenin's, Norton's, Maximum power transfer and Millman's theorem's for DC and sinusoidal excitations, Tellegen's, superposition, reciprocity and compensation theorem's for DC and Sinusoidal excitations.

TEXT BOOKS:

1. Circuits and networks by A. Sudhakar and Shyamohan SPalli, Tata McGraw, Hill.
2. Alexander and sadiku: Fundamentals of Electric circuits, Mc, graw Hill.

REFERENCE BOOKS:

1. Network analysis by M.E Van Valkenberg
2. Engineering circuit analysis by William Hayt and Jack E.Kemmerly, McGraw Hill Company, 6th edition.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

P	C
4	2

**(16HS607) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB
(Common to CE, EEE & ME)**

The Language Lab focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations and contexts.

Course objectives:

- To enable students to learn better pronunciation through stress on word accent, Intonation and rhythm.
- To help the second language learners to acquire fluency in spoken English and neutralize mother tongue influence.
- To train students to use language appropriately in both formal and informal situations.
- To enhance written communication among the students.

Course outcomes:

- To become active participants in the learning process and acquire proficiency in spoken English.
- To speak with clarity and confidence thereby enhances employability skills.
- To prepare effective job application

UNIT I

1. Phonetics -Importance
2. Introduction to Sounds of Speech
3. Vowels and Consonant sounds
4. Phonetic Transcription

UNIT II

5. Word Stress
6. Syllabification
7. Rules of Word Stress
8. Intonation

UNIT - III

9. Situational Dialogues/ Role Play
10. Telephonic Communication
11. JAM

UNIT IV

12. Describing Persons/ places/ things

13. Oral Presentations
14. Debate

UNIT V

15. Group Discussion
16. Job application
17. Interview skills

Minimum Requirements for ELCS Lab:

The English Language Lab shall have two parts:

1. Computer Assisted Language Learning (CALL) Lab: The Computer aided Language Lab for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
2. The Communication Skills Lab with movable chairs and audio-visual aids with a P.A. system,

Projector, a digital stereo-audio & video system and camcorder etc.

System Requirement (Hardware component):

Computer network with LAN with minimum 60 multimedia systems with the following specifications:

- i) P – IV Processor
 - a) Speed – 2.8 GHZ
 - b) RAM – 512 MB Minimum
 - c) Hard Disk – 80 GB
- ii) Headphones of High quality

Suggested Software:

1. Clarity Pronunciation Power – Part I (Sky Pronunciation)
2. Clarity Pronunciation Power – part II
3. K-Van Advanced Communication Skills
4. Walden InfoTech Software.

REFERENCES:

1. A Textbook of English Phonetics for Indian Students 2nd Ed T. Balasubramanian. (Macmillan), 2012
2. A Course in Phonetics and Spoken English, Dhamija Sethi, Prentice-Hall of India Pvt.Ltd
3. Speaking English Effectively, 2nd Edition Krishna Mohan & NP Singh, 2011. (McMillan).
4. A Hand book for English Laboratories, E.Suresh Kumar, P.Sreehari, Foundation Books, 2011.
5. Spring Board Success, Sharada Kouhik, Bindu Bajwa, Orient Blackswan, Hyderabad, 2010.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

**P C
4 2**

**(16HS609) ENGINEERING CHEMISTRY LAB
(Common to CE, EEE & ME)**

Course Objectives:

- To provide students with practical knowledge of quantitative analysis of materials by classical and instrumental methods for developing experimental skills in building technical competence.

Course Outcomes:

On completion of this course, students will have the knowledge in.

- Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.
- Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results.

Any 10 of the following experiments has to be performed during the I year I Sem.

List of Experiments:

Determination of total hardness of water by EDTA method.

1. Determination of Copper by EDTA method.
2. Estimation of Dissolved Oxygen by Winkler's method.
3. Estimation of iron (II) using diphenylamine indicator (Dichrometry –Internal indicator method).
4. Determination of Alkalinity of Water.
5. Determination of acidity of Water.
6. Preparation of Phenol-Formaldehyde (Bakelite).
7. Determination of Viscosity of oils using Redwood Viscometer I.
8. Determination of Viscosity of oils using Redwood Viscometer II.
9. Determination of calorific value of gaseous fuels by Junker's Calorimeter.
10. Conductometric estimation of strong acid using standard sodium hydroxide solution.
11. Determination of Corrosion rate and inhibition efficiency of an inhibitor for mild steel in hydrochloric acid medium.
12. Potentio metric determination of iron using standard potassium dichromate.
13. Colorometric estimation of manganese.
14. pH meter calibration and measurement of pH of water and various other samples.

REFERENCES:

1. *Vogel's Text book of Quantitative Chemical Analysis*, Sixth Edition – Mendham J et al, Pearson Education, 2012.
2. *Chemistry Practical– Lab Manual*, First edition, Chandra Sekhar KB, Subba Reddy GV and Jayaveera KN, SM Enterprises, Hyderabad, 2014.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

I B. Tech. – II Sem. (E.E.E)

P	C
4	2

(16EE202) ELECTRICAL CIRCUITS LAB

Course Objectives:

To make the student learn about:

- *Experimental verification of theorems*

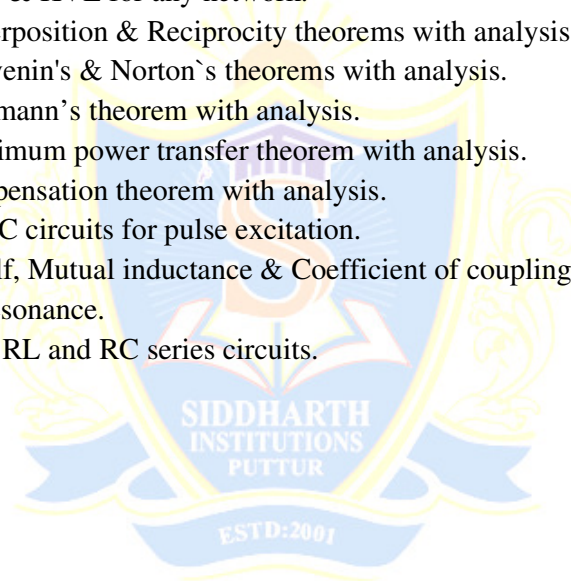
Course Outcomes:

After completing the course, the student should be able to do the following:

- *Apply suitable theorems for circuit analysis and verify the results theoretically*

List of Experiments:

1. Verification of KCL & KVL for any network.
2. Verification of Superposition & Reciprocity theorems with analysis.
3. Verification of Thevenin's & Norton's theorems with analysis.
4. Verification of Millmann's theorem with analysis.
5. Verification of Maximum power transfer theorem with analysis.
6. Verification of compensation theorem with analysis.
7. Analysis of RL & RC circuits for pulse excitation.
8. Determination of self, Mutual inductance & Coefficient of coupling of pair of coils.
9. Series & Parallel Resonance.
10. Locus diagrams of RL and RC series circuits.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - I Sem. (E.E.E)

L	T	C
3	1	3

**(16HS612) ENGINEERING MATHEMATICS-III
(Common to all branches)**

Course Objectives:

- To train the students thoroughly in Mathematical concepts of Complex Analysis, Interpolation, Curve fitting, Numerical Differentiation and Integration and their applications
- To prepare students for lifelong learning and successful careers using mathematical concepts of Complex Analysis, Interpolation, Curve fitting, Numerical Differentiation and Integration and their applications
- To develop the skill pertinent to the practice of the mathematical concepts including the students abilities to formulate and modeling the problems, to think creatively and to synthesize information

Course Outcomes:

At the end of the course, students would be expected to:

- Have acquired ability to participate effectively in group discussions
- Have developed ability in writing in various contexts
- Have acquired a proper level of competence for employability
- Have acquired computational skills to solve real world problems in engineering

UNIT I

COMPLEX ANALYSIS-I: Analytic functions, Cauchy– Riemann equations, complex integration, Cauchy’s theorem, Integral formula, Evaluation of Integrals.

UNIT II

COMPLEX ANALYSIS-II: Singularities, poles, Residues, Residues theorem, Evaluation of real integrals of the types $\int_0^{2\pi} f(\cos \theta, \sin \theta) d\theta$, $\int_{-\infty}^{\infty} e^{imx} f(x) dx$ - conformal mapping – Bilinear transformations- Transformation of e^z , Z^2 , Sin z, and Cos z.

UNIT III

SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS: The Bisection Method, The Method of False Position, Newton-Raphson Method.

INTERPOLATION: Newton’s forward and backward interpolation formula, Lagrange’s interpolation formula.

UNIT IV

CURVE FITTING: Fitting of a straight line, Second degree curve, Exponential curve, Power curve by method of least squares.

NUMERICAL DIFFERENTIATION AND INTEGRATION: Trapezoidal rule, Simpson's 1/3 Rule, Simpson's 3/8 Rule.

UNIT V

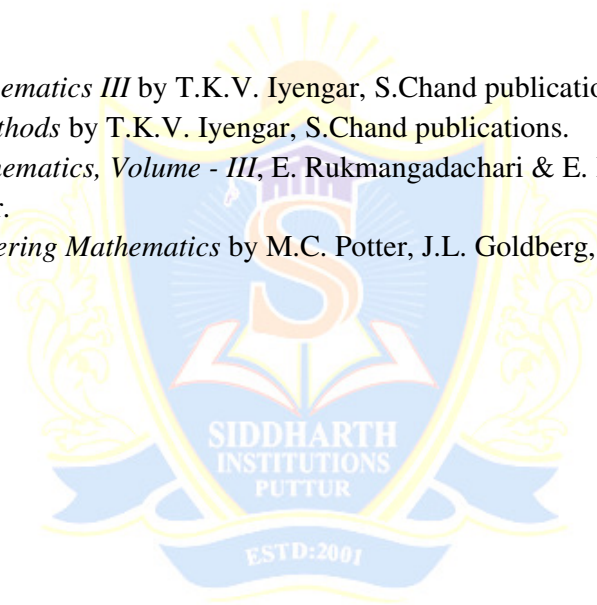
NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS: Solution by Taylor's series, Picard's Method of successive Approximations, Euler's Method, Runge-Kutta second and fourth order methods.

TEXT BOOKS:

1. *Higher Engineering Mathematics*, B.S.Grewal, Khanna publishers.
2. *Advanced Engineering Mathematics*, Peter V.O'Neil, CENGAGE publisher.

REFERENCES:

1. *Engineering Mathematics III* by T.K.V. Iyengar, S.Chand publications.
2. *Mathematical Methods* by T.K.V. Iyengar, S.Chand publications.
3. *Engineering Mathematics, Volume - III*, E. Rukmangadachari & E. Keshava Reddy
Pearson Publisher.
4. *Advanced Engineering Mathematics* by M.C. Potter, J.L. Goldberg, Edward F.Aboufadel,
and Oxford.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - I Sem. (E.E.E)

L	T	C
3	0	3

**(16HS605) ENVIRONMENTAL STUDIES
(Common to EEE, ECE & CSE)**

Course Objectives:

- Students have got an idea about the importance of pollution free air, water, soil and food.
- They know about global environmental problems like Acid Rains, Global Warming, Green House Effects, Ozone layer depletion.
- To understand the impacts of developmental activities and mitigation measures along with the environmental policies and regulations.
- To recognize major concepts in environmental studies and demonstrate in-depth understanding the environment.

Course Outcomes:

- Based on this course, the Engineering Student will be able to understand/evaluate/develop technologies on the basis of Ecological principles and environmental regulations along with Legislation, Laws and Policies which in turn help in sustainable development.
- Take preventive measures to reduce air, water, soil pollutions and contaminants in food.
- Effectively carry out waste disposal at individual level.
- Involve in preservation of natural resources.

UNIT I

INTRODUCTION: Definition, Scope and Importance-Need for Public Awareness

NATURAL RESOURCES: Classification of resources-Forest resources: Use and over-exploitation, deforestation- Mining, dams and their effects on forests and tribal people – Water resources - Use and over utilization of surface and ground water- Floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources –Energy resources: Renewable and Non- Renewable sources of energy- Solar energy, Hydro electrical energy, Wind energy, Nuclear energy, etc.

UNIT II

ECOSYSTEMS: Concept of an ecosystem– structural features of ecosystem- Producers, Consumers and Decomposers–Biogeochemical cycles- Ecological succession-Food chains, food webs and ecological pyramids – Energy flow in the ecosystem-Types of ecosystems (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems.

UNIT III

BIODIVERSITY AND ITS CONSERVATION: Introduction, Definition, genetic, species and ecosystem diversity, Bio-geographical classification of India, India as a Mega-diversity Nation, Hot spots of biodiversity, Value of biodiversity, threats to biodiversity, endemic, endangered and extinct species of India, In-Situ and Ex-situ conservation of biodiversity.

UNIT IV

ENVIRONMENTAL POLLUTION AND GLOBAL ENVIRONMENTAL ISSUES: Natural Disasters: Droughts, Floods, Cyclone, Landslides, Earthquake, Pollution episodes: Air pollution, Water pollution, Land pollution, Noise pollution, Automobile pollution and Nuclear pollution –Effects-Global warming, Acid Rain and Ozone layer depletion and controlling measures.

Global Environmental Issues: Population Growth, Urbanizations, Land Management, Water and Waste Water Management. Climate change and impacts on human environment

Solid Waste Management: causes, effects and control measures of Municipal solid wastes – E-waste and management, Role of an individual in prevention of pollution – pollution case studies.

UNIT V

ENVIRONMENTAL LEGISLATION, LAWS, POLICIES FOR SUSTAINABLE DEVELOPMENT: Environmental Legislation, Environmental Protection act – Air Prevention and Control of Pollution act–Water Prevention and control of Pollution act–Wildlife protection act – Forest conservation act – Municipal Solid Waste management, International conventions/Protocols : Earth summit, Kyoto protocol and Montreal Protocol. From Unsustainable to sustainable development, Role of NGO's for Sustainable development, Concepts of Green belt development, Role of IT in Environment-Remote Sensing and GIS methods for Sustainable development.

FIELD WORK: visit to a local area to document environmental assets-river forest grassland/hill, mountain and polluted sites (urban/rural/industrial/Agriculture) - study simple ecosystems (pond/river/hill slopes)

TEXT BOOKS:

1. *A Text book on Environmental Sciences* by Kaushik A and Kaushik C P 5th edition, New age international publishers, 2015.
2. *Text Book of Environmental Science and Technology* by Anji Reddy M, BS Publications, 2007.

REFERENCES:

1. *Environmental Studies*, Anil Kumar and Arnab Kumar De, New Age International Publishers, New Delhi, 3rd Edition 2015.
2. *Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards*, R.K. Trivedi, Vol.I and II, Enviro Media.
3. *Environmental Studies* by Mukkanthi K, S.Chand Publishers, 2010.

4. *Environmental Studies-From Crisis to Cure*, Rajagopalan.R Oxford University Press, 2005.
5. *Text Book of Environmental Studies*, Erach Bharucha, University Grants Commission, University Press (India) Pvt.Ltd., Hyderabad, 2010.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - I Sem. (E.E.E)

L	T	C
3	0	3

(16EE203) NETWORK ANALYSIS & SYNTHESIS

Course Objectives:

- To understand about phasor concepts of three Phase circuits.
- To study transient behavior and Steady state analysis of DC and AC circuits.
- To understand the concepts of two, port networks, Filters and Attenuators.

UNIT-I

THREE PHASE CIRCUITS

Three phase circuits: phase sequence, star and delta connection, relation between line and phase Voltages and currents in balanced systems, analysis of balanced and unbalanced three phase circuits measurement of active and reactive power.

UNIT-II

TRANSIENT ANALYSIS

Transient response of R-L, R-C, and R-L-C Series circuits for d.c.excitation, initial conditions, solution method using differential equations and Laplace transforms response of R-L and R-C networks to pulse excitation.

Transient response of R-L, R-C, and R-L-C Series circuits for sinusoidal excitations, initial conditions, solution method using differential equations and Laplace transforms.

UNIT-III

NETWORK TOPOLOGY

Definitions, graph, tree, basic cut set and basic tie set matrices for planar networks, loop and nodal methods of analysis of networks with dependent and independent voltage and current sources, duality and dual networks.

UNIT-IV

TWO PORT NETWORKS

Two port network parameters Z, Y, ABCD and hybrid parameters and their relations, Concept of transformed network, two port network parameters using transformed variables, cascaded networks.

UNIT-V

FILTERS & SYMMETRICAL ATTENUATORS

Classification of Filters, Filter Networks, Classification of Pass band Stop band, characteristic impedance in the pass and stop bands, Constant-K Low pass filter, high pass filter, m – derived, T-section, band pass filter and band elimination filter ,illustrative filters.

Symmetrical Attenuators, T-type Attenuators, π -Type Attenuators, Bridged T-type attenuator, Lattice Attenuators.

TEXT BOOKS:

1. Circuits and networks by A.Sudhakar and Shyamohan S.Palli, Tata McGraw, Hill
2. Alexander and sadiku: Fundamentals of Electric circuits, Mc, graw Hill.

REFERENCES:

1. Network analysis by M.E.Van Valkenberg, prantice hall India, 3rd edition.
2. Electric circuit analysis by C.L.Wadhwa, new age international.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - I Sem. (E.E.E)

L	T	C
3	0	3

(16EC401) BASIC ELECTRONIC DEVICES

Course Objectives:

- To give understanding on semiconductor physics of the intrinsic, p and n materials, characteristics of the p-n junction diode, applications of diode in electronic circuits, Characteristics of BJT, FET, MOSFET, characteristics of special purpose electronic devices.
- To familiarize students with DC biasing circuits of BJT, FET and analyzing basic transistor amplifier circuits.

Course Outcomes:

- Upon completion of the course, students will:
- Analyze the operating principles of major electronic devices, its characteristics and applications.
- Design and analyze the DC bias circuitry of BJT and FET.
- Design and analyze basic transistor amplifier circuits using BJT and FET.

UNIT- I

PN JUNCTION DIODE

Energy bands in intrinsic and extrinsic silicon; Carrier transport: diffusion current, drift current, mobility and resistivity; Generation and recombination of carriers; Poisson and continuity equations, Open circuited p-n junction, Biased p-n junction, current components in PN junction Diode, diode equation, V-I Characteristics, temperature dependence on V-I characteristics, Diode resistance, Diode capacitance, energy band diagram of PN junction Diode.

UNIT-II

SPECIAL SEMICONDUCTOR DEVICES

Zener Diode: Breakdown mechanisms, applications, LED, LCD, Photo diode, Varactor diode, Tunnel Diode, DIAC, TRIAC, SCR, UJT , Photo transistor, IR Emitters, Solar cell, Schottky Barrier diode - Construction, operation and characteristics.

UNIT- III

RECTIFIERS AND FILTERS

Basic Rectifier setup, half wave rectifier, full wave rectifier, bridge rectifier, characteristics of rectifiers, rectifier circuits-operation, input and output waveforms, Filters, Inductor filter, Capacitor filter, L-section filter, Π -section filter, Multiple L-section and Multiple Π - section filter ,comparison of various filter circuits in terms of ripple factors.

UNIT- IV**TRANSISTOR CHARACTERISTICS**

BJT: Construction, transistor current components, transistor configurations, transistor as an amplifier, and characteristics of transistor in Common Base, Common Emitter and Common Collector configurations, Ebers-Moll model of a transistor, punch through/ reach through, typical transistor junction voltage values.

FET: Types, JFET: construction, operation, characteristics, MOSFET: types, construction, operation, characteristics, comparison between JFET and MOSFET.

UNIT- V**TRANSISTOR BIASING AND THERMAL STABILIZATION**

Need for biasing, operating point, DC and AC load line analysis, BJT biasing- methods, , fixed bias, collector to base bias, self-bias, Stabilization against variations in V_{BE} , I_c , and β , Stability factors, (S , S' , S''), Bias compensation, Thermal runaway, Thermal stability. FET Biasing methods.

TEXT BOOKS:

1. Electronic Devices and Circuits, J. Millman, C. Halkias Tata Mc-GrawHill, 4th Edition, 2010.
2. Electronic Devices and Circuits, David A. Bell, Fifth Edition, Oxford University Press, 2009.
3. Electronic Devices and Circuits, R.L. Boylestad and Louis Nashelsky Pearson Publications, 9th Edition, 2006

REFERENCES:

1. Integrated Electronics, Jacob Millman, C. Halkies, C.D. Parikh, Tata Mc-Graw Hill, 2009.
2. Electronic Devices and Circuits, Salivahanan, Kumar, Vallavaraj, Tata Mc-Graw Hill, Second Edition.
3. Electronic Devices and Circuits, BV Rao, KBR Murty, K Raja Rajeswari, PCR Pantulu Pearson, 2nd edition.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - I Sem. (E.E.E)

L	T	C
3	0	3

(16EE210) GENERATION OF ELECTRIC POWER

Course Objectives:

To make the student learn about:

- *Structure, essential components and their layout in thermal power station*
- *Selection of site for thermal power station*
- *Selection of site for hydro power generation*
- *Various aspects and issues involved in Nuclear power generation*
- *Electric power generation from renewable energy sources as sun, wind and ocean*
- *Cost of generation and tariff methods*

Course Outcomes:

After completing the course, the student should be able to do the following:

- *Estimate the coal requirement, cost per kWh generation and number of units generated for thermal power station*
- *Estimate the required flow of river water, cost of generation and number of units generated in hydel power generation*
- *Compute various factors like load factor, plant factor*
- *Evaluate the tariffs to be charged for the consumers*
- *Plot the load curve, load duration curve and hence determine the load capacity of the plant*

UNIT I

THERMAL POWER GENERATING SYSTEMS

Block Diagram of Thermal Power Station (TPS) showing paths of Coal, Steam, Water, Air, Ash and Flue Gasses, Brief Description of TPS Components: Economizers, Boilers, Super Heaters, Turbines, Condensers, Chimney and Cooling Towers.

UNIT II

HYDRO & NUCLEAR POWER GENERATING SYSTEMS

Hydro Power: Selection of Site, Classification, Layout, Description of Main Components.

Nuclear Power: Nuclear Fission and Chain Reaction, Nuclear Fuels, Principle of Operation of Nuclear Reactor, Reactor Components: Moderators, Control Rods, Reflectors and Coolants, Radiation Hazards: Shielding and Safety Precautions, Types of Nuclear Reactors and Brief Description of PWR, BWR and FBR.

UNIT III

SOLAR & WIND POWER GENERATING SYSTEMS

Solar Power Generation: Role and Potential of Solar Energy Options, Principles of Solar Radiation, Flat Plate and Concentrating Solar Energy Collectors, Different Methods of Energy Storage, PV Cell, V-I Characteristics.

Wind Power Generation: Role and potential of Wind Energy Option, Horizontal and Vertical Axis Wind Mills, Performance Characteristics, Power, Speed & Torque, Speed Characteristics, Pitch & Yaw Controls, Power Electronics Application, Economic Aspects.

UNIT IV

BIOGAS & GEOTHERMAL POWER GENERATING SYSTEMS

Biogas Power Generation: Principles of Bioconversion, Types of Biogas Digesters, Characteristics of Bio-Gas, Utilization, Economic and Environmental Aspects of biogas geothermal power generating systems.

Geothermal and Ocean Power Generation: Principle of Geothermal Energy Methods of Harnessing, Principle of Ocean Energy, Tidal and Wave Energy, Mini Hydel Plants, Economic Aspects.

UNIT V

ECONOMIC ASPECTS OF POWER GENERATION

Load Curve, Load Duration and Integrated Load Duration Curves, Load Demand, Diversity, Capacity, Utilization and Plant Use Factors, Numerical Problems. Costs of Generation and their Division Into Fixed, Semi, Fixed and Running Costs. Tariff Methods: Desirable Characteristics of a Tariff Method, Flat Rate, Block, Rate, Two-Part, Three –Part, and Power Factor Tariff Methods and Numerical Problems.

TEXT BOOKS:

1. A Text Book on Power System Engineering by M.L.Soni, P.V.Gupta, U.S.Bhatnagar and A.Chakraborti, Dhanpat Rai & Co. Pvt. Ltd., 1999.
2. Electric Power Generation Distribution and Utilization by C.L Wadhwa, New Age International (P) Ltd., 2005.
3. Non Conventional Energy Sources by G.D. Rai, Khanna Publishers, 2000.

REFERENCES:

1. Renewable Energy Resources, John Twidell and Tony Weir, Second Edition, Taylor and FrancisGroup, 2006.
2. Electrical Power Generation, Transmission and Distribution by S.N.Singh., PHI, 2003.
3. Principles of Power Systems by V.K Mehta and Rohit Mehta S.CHAND& COMPANY LTD., NewDelhi 2004.
4. Wind Electrical Systems by S. N. Bhadra, D. Kastha & S. Banerjee, Oxford University Press2013.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - I Sem. (E.E.E)

L	T	C
3	0	3

(16EE211) ELECTRICAL MACHINES –I

Course Objectives:

To make the students learn about:

- *The constructional features of DC machines and different types of winding employed in DC machines*
- *The phenomena of armature reaction and commutation*
- *Characteristics of generators and parallel operation of generators*
- *Methods for speed control of DC motors and applications of DC motors*
- *Various types of losses that occur in DC machines and how to calculate efficiency*
- *Testing of DC motors*

Course Outcomes:

After completing the course, the student should be able to do the following:

- *Calculate the e.m.f. generated on open circuit and find terminal voltage on load*
- *Diagnose the failure of DC generator to build up voltage*
- *Compute the load shared by each generator when several generators operate in parallel*
- *Determine the gross torque and useful torque developed by DC motor*
- *Identify suitable method and conditions for obtaining the required speed of DC motor*
- *Calculate the losses and efficiency of DC generators and motors*

UNIT-I:

ELECTROMECHANICAL ENERGY CONVERSION

Introduction: Laws of magnetism, Electromechanical Energy Conversion, Forces and Torque in Magnetic Field Systems, Energy Balance, Energy in a Singly Excited Magnetic Field System, Determination of Magnetic Force and Torque from energy, Co-Energy, Determination of Magnetic Force and Torque from co-energy, Multi Excited Magnetic Field Systems, Forces and Torque in system with permanent magnets, Dynamic Equations, Problems.

UNIT-II:

D.C. GENERATORS

D.C. Generators, Principle of Operation, Constructional Features, Armature Windings, Lap and Wave Windings, Simplex and Multiplex Windings, Use of Laminated Armature, E.M.F Equation, Numerical Problems, Parallel Paths, Armature Reaction, Cross Magnetizing and DeMagnetizing AT/Pole, Compensating Winding, Commutation, Reactance Voltage, Methods of Improving Commutation.

UNIT-III:**CHARACTERISTICS OF D.C GENERATORS**

Methods of Excitation, Separately Excited and Self Excited Generators, Build-Up of E.M.F, Critical Field Resistance and Critical Speed, Causes for Failure to Self Excite and Remedial Measures, Load Characteristics of Shunt, Series and Compound Generators, Parallel Operation of D.C Series Generators, Use of Equalizer Bar and Cross Connection of Field Windings, Load Sharing.

UNIT-IV:**D.C. MOTORS**

D.C Motors, Principle of Operation, Back E.M.F, Torque Equation, Characteristics and application of Shunt, Series and Compound Motors, Armature Reaction and Commutation. Speed Control of D.C. Motors: Armature Voltage and Field Flux Control Methods, Ward-Leonard System, Braking of D.C Motors, 2- point, 3- Point and 4- Point Starters, Calculation of Starters Steps for D.C Shunt Motors.

UNIT-V:**TESTING OF DC MACHINES**

Losses, Constant & Variable Losses, power stages, Calculation of Efficiency, Condition for Maximum Efficiency, Methods of Testing, Direct, Indirect, Brake Test, Swinburne's Test, Hopkinson's Test, Field's Test, Retardation Test, separation of stray losses in a d.c. motor test.

TEXT BOOKS:

1. Electric Machines by I.J. Nagrath & D.P. Kothari, Tata Mc Graw,Hill Publishers, 3rd Edition, 2004.
2. Electrical Machinery Fundamentals by Stephen J Chapman, Mc Graw Hills, 2005.

REFERENCE BOOKS:

1. Performance and Design of D.C Machines,by Clayton & Hancock, BPB Publishers, 2004.
2. Electrical Machines,S.K. Battacharya, TMH Edn Pvt. Ltd., 3rd Edition, 2009.
3. Electric Machinery,A. E. Fitzgerald, C. Kingsley and S. Umans, Mc Graw,Hill Companies,5th Editon, 2003.
4. Electrical Machines,M.V Deshpande, Wheeler Publishing, 2004.
5. Electrical Machines,P.S. Bimbhra., Khanna Publishers, 2011.
6. Electromechanics,I, Kamakshaiah S., Overseas Publishers Pvt. Ltd, 3rd Edition, 2004

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

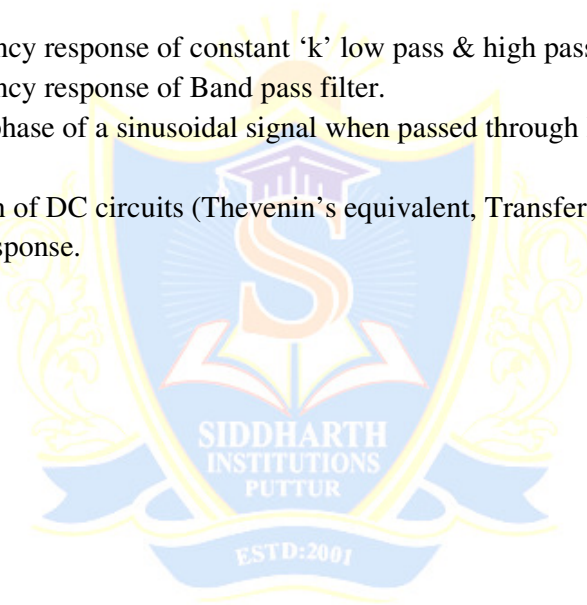
II B.Tech. - I Sem. (E.E.E)

P	C
4	2

(16EE204) NETWORK ANALYSIS AND SYNTHESIS LAB

List of Experiments:

1. Determination of Z & Y parameters of two port network.
2. Determination of Transmission and Hybrid parameters.
3. Measurement of Active Power for Star and Delta Connected Balanced Loads.
4. Measurement of Reactive Power for Star and Delta Connected Balanced Loads.
5. Measurement of three phase power by two wattmeter method for balanced & unbalanced Loads.
6. Design and frequency response of constant 'k' low pass & high pass filters.
7. Design and frequency response of Band pass filter.
8. Determination of phase of a sinusoidal signal when passed through RL and RC Circuits.
9. PSPICE simulation of DC circuits (Thevenin's equivalent, Transfer function).
10. DC Transient Response.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - I Sem. (E.E.E)

P	C
4	2

(16EC405) BASIC ELECTRONIC DEVICES LAB

Course Objectives:

- *This Lab provides the students to get an electrical model for various semiconductor devices. Students can find and plot V- I characteristics of all semiconductor devices. Student learns the practical applications of the devices.*

Course Outcomes:

- *Students able to learn electrical model for various semiconductor devices and learns the practical applications of the semiconductor devices*

ELECTRONIC WORKSHOP PRACTICE (in 3 lab sessions):

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Switches (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Boards, PCB s
2. Identification, Specifications and Testing of Active Devices, Diodes, BJTs, Low power JFETs, MOSFETs, Power Transistors, LEDs, LCDs, SCR, UJT.
3. Study and operation of
 - Multimeters (Analog and Digital)
 - Function Generator
 - Regulated Power Supplies
 - Study and Operation of CRO.

(For Laboratory examination – Minimum of 10 experiments)

1. Forward and Reverse bias characteristics of PN Junction diode
2. Zener diode characteristics and Zener as Voltage Regulator.
3. Input and Output characteristics of Transistor in CB Configuration.
4. Input and Output characteristics of Transistor in CE Configuration.
5. Half Wave Rectifier With and without filter.
6. Full wave Rectifier With and without filter.
7. FET characteristics
8. Measurement of h parameters of transistor in CB, CE, CC configurations
9. Frequency response of CE Amplifier.
10. Frequency response of CC Amplifier.
11. Frequency response of Common Source FET Amplifier.
12. SCR Characteristics.
13. UJT Characteristics.

Equipment required for Laboratories:

1. Regulated Power supplies (RPS) - 0-30v.
2. CROs - 0-20M Hz.
3. Function Generators - 0-1 M Hz.
4. Multimeters -
5. Decade Resistance and Capacitance Boxes
6. Electronic components
7. Micro Ammeters (Analog or Digital)- 0-20 μ A, 0-50 μ A,0-100 μ A, 0-200 μ A.
8. Voltmeters (Analog or Digital) - 0-5V, 0-10V,0-25V.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B. Tech -I Sem. (E.E.E.)	L	T	C
	0	0	1

(COE-I) COMPREHENSIVE ONLINE EXAMINATION -I

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B. Tech -I Sem. (E.E.E.)		L
		3

**(16CS503) DATA STRUCTURES THROUGH C
(AUDIT COURSE)
(Common to CE, EEE, ME & ECE)**

Course Objectives:

- Understand different data structures
- Understand searching and sorting techniques

Course Outcomes:

- At the end of the course, students will be able to:
- Design algorithms to implement various data structures.
- Understand and program stacks and list data structures.
- Write programs to implement different types of queues.
- Understand and make use of hash tables in applications like dictionary, spell checker etc.,
- Understand why height balanced trees are advantageous over other data structures.

UNIT I

INTRODUCTION AND OVERVIEW: One Dimensional array- Multi Dimensional array- pointer arrays. **Linked lists:** Definition- Single linked list- Circular linked list- Double linked list- Circular Double linked list- Application of linked lists.

UNIT II

STACKS: Introduction-Definition-Representation of Stack-Operations on Stacks-Applications of Stacks. **Queues:** Introduction, Definition- Representations of Queues- Various Queue Structures- Applications of Queues.

UNIT III

TREES: Basic Terminologies- Definition and Concepts- Representations of Binary Tree- Operation on a Binary Tree- Types of Binary Trees-Binary Search Tree, Heap Trees

GRAPHS: Introduction- Graph terminologies- Representation of graphs- Operations on Graphs- Application of Graph Structures: Shortest path problem- topological sorting.

UNIT IV

SORTING : Sorting Techniques- Sorting by Insertion: Straight Insertion sort- List insertion sort- Binary insertion sort- Sorting by selection: Straight selection sort- Heap Sort- Sorting by Exchange- Bubble Sort- Shell Sort- Quick Sort-Sorting by Mergin: Simple Merging-Binary Merge-Merge Sort.

UNIT V

SEARCHING: Linear Search Techniques: Linear Search with Array- Linear Search with Linked List- Linear Search with ordered list- Binary Search- Fibonacci Search.

TABLES: Hash Tables: Hashing Techniques- Collision Resolution Techniques- Closed Hashing- Open Hashing.

TEXT BOOKS:

1. *Classic Data Structures*, Second Edition by Debasis Samanta, PHI.
2. *Data Structures A Pseudo code Approach with C*, Second Edition by Richard F. Gilberg, Behrouz A. Forouzan, Cengage Learning.

REFERENCES:

1. *Fundamentals of Data Structures in C* – Horowitz, Sahni, Anderson-Freed, Universities Press, Second Edition.
2. *Outlines – Data Structures* – Seymour Lipschutz – McGrawHill- Revised First Edition.
3. *Data structures and Algorithms using C++*, Ananda Rao Akepogu and Radhika Raju Palagiri, Pearson Education.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

L	T	C
3	1	3

**(16HS613) PROBABILITY & STATISTICS
(Common to EEE, CE, ME & CSE)**

Course Objectives:

- *To train the students thoroughly in Mathematical concepts fundamentals of probability, test of hypothesis, Test of significance and ANOVA*
- *To prepare students for lifelong learning and successful careers using mathematical concepts of probability, test of hypothesis, Test of significance and ANOVA*
- *To develop the skill pertinent to the practice of the mathematical concepts including the Student abilities to formulate and modeling the problems, to think creatively and to Synthesize information*

Course Outcomes:

At the end of the course, students would be expected to:

- *Have acquired ability to participate effectively in group discussions*
- *Have developed ability in writing in various contexts*

Have acquired a proper level of competence for employability

UNIT-I

Probability: Introduction, Conditional probability, Baye's theorem, Random variables, Discrete and continuous Distributions, Expectation, Variance, Moments, Moment generating functions

UNIT-II

Distributions, Binomial, Poisson, Normal, Uniform, Exponential and Gamma distributions, related properties and applications

UNIT-III

Test of Hypothesis: Population and Sample, Confidence interval of mean from Normal distribution, Null and Alternative hypothesis, Level of significance

Test of significance: Test based on normal distribution, Z test for means and proportions, Small samples t- test for one sample and two sample problem and paired t-test, F-test and Chi-square test (testing of goodness of fit and independence).

UNIT-IV

Analysis of variance one way classification and two way classification (Latin square Design and RBD)

UNIT-V

Statistical Quality Control: Concept of quality of a manufactured product, Defects and Defectives, Causes of variations, Random and assignable, The principle of Shewhart Control

Chart-Charts for attribute and variable quality characteristics, Constructions and operation of X- bar Chart, R-Chart, P-Chart and C-Chart.

Text Books:

1. Statistical methods by S.P. Gupta, S.Chand publications.
2. Probability & Statistics by T.K.V. Iyengar, S.Chand publications.

Reference Books:

1. Probability & Statistics by E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher.
2. Probability & Statistics for engineers by Dr. J. Ravichandran WILEY-INDIA publishers.
3. Probability & Statistics for Science and Engineering by G.Shanker Rao, Universities Press.
4. Probability and Statistics for Engineering and Sciences by Jay L.Devore, CENGAGE.
5. Probability and Statistics by R.A. Jhonson and Gupta C.B



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

L	T	C
3	1	3

(16CE112) FLUID MECHANICS & HYDRAULIC MACHINERY

Course Objectives:

- *To understand the basic concepts of Fluid properties and fluid statics.*
- *To understand the applications of fluid kinematics and dynamics.*
- *To understand the behavior of pipe flow and losses in pipe flow.*
- *To understand the concepts of flow measurements and boundary layer flows.*
- *To understand the working principles of hydraulic machinery.*

Course Outcomes:

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

- *How to find frictional losses in a pipe when there is a flow between two places.*
- *Know types of flow and its measurements and applications.*
- *Identify the suitable pump required for different purposes.*
- *Classify the turbines and design criteria based on water availability.*

UNIT I

Fluid Properties: Dimensions and units, Definition of a fluid, Physical properties of fluids, Density, Specific weight, Specific volume, Specific gravity, Compressibility, Vapour pressure, Surface tension and capillarity and Viscosity.

Fluid Statics: Pascal's law, Pressure variation in a static fluid, Atmospheric, gauge and absolute pressures, Measurement of pressure, Piezometer, U-tube and inverted U-tube manometers and Bourdon's pressure gauge, Hydrostatic forces on plane and curved surfaces, Center of pressure.

UNIT II

Fluid Kinematics: Types of flow, Streamline, Streak line, Path line, Stream tube, Control volume, Continuity equation in one and three dimensional forms, Stream function and velocity potential function, Flow net, Acceleration of a fluid particle, Local and convective accelerations, Tangential and normal accelerations.

Fluid Dynamics: Euler's equation of motion along a streamline, Bernoulli's energy equation, Energy correction factor, Impulse, momentum equation, Momentum correction factor, Force on a bend, Energy gradient line, Hydraulic gradient line, Analysis of free liquid jets, Forced vortex and free vortex.

UNIT III

Analysis of Pipe Flow: Reynold's experiment, Reynold's number, Minor losses in pipe flow, Darcy–Weisbach equation, Variation of friction Factor, Moody's chart, Pipes in series, Pipes in parallel, Boundary Layer Theory.

Flow Measurement: Velocity measurement by Pitot tube and Pitot static tube, Discharge measurement by Venturimeter and orifice meter, Orifices and mouthpieces

UNIT IV

Dimensional Analysis And Similitude: Introduction, dimensions; dimensional homogeneity; Methods of dimensional analysis, Rayleigh's method; Buckingham - Pi theorem. Similitude, Types of Similarities, Model Laws

UNIT V

HYDRAULIC TURBINES: Elements of hydroelectric power plants, Heads and efficiencies of turbines, Classification of turbines, Pelton Wheel, Modern Francis turbine, Kaplan turbine. Main components and working principle, Expressions for work done and efficiency, Working proportions and design of each

CENTRIFUGAL PUMPS: Classification and types of pumps, Components and working of a centrifugal pump, Work done by the impeller, Heads and efficiencies, Net positive suction head(NPSH), Priming ,Priming devices, Minimum starting speed, Multistage pumps, Pumps in series and parallel, Submersible pumps, Limiting suction head, Cavitation, Expression for specific speed.

TEXT BOOKS:

1. Hydraulics and Fluid Mechanics Including Hydraulics Machines, 20th Edition, Dr.P.N. Modi & Dr. S.M. Seth, Standard Book House
2. A Textbook of Fluid Mechanics and Hydraulic Machines, 9th Edition, Dr. R. K. Bansal, Laxmi Publications

REFERENCES:

1. Fluid Mechanics, 9th Edition, Victor Streeter, E. Benjamin Wylie, K.W. Bedford, McGraw Hill Education
2. Fluid Mechanics and Machinery, 1st Edition, C.S.P.Ojha, P.N.Chandamouli & R.Berndtsson, Oxford University Press
3. Fluid Mechanics and Hydraulic Machines, 1st Edition, S. C. Gupta, Pearson India Education Services Pvt. Ltd.
4. Fluid Mechanics and Machinery, 1st Edition, Rama Durgaiah D., New Age International

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

L	T	C
3	1	3

(16EE214) ELECTROMAGNETIC FIELDS

Course Objectives:

To make the student learn about:

- *The laws concerning static electric fields: Coulomb's law, Gauss law; the laws concerning static magnetic fields: Biot, savart law, Ampere circuital law*
- *The equations concerned with static electric fields*
- *The equations concerned with static magnetic fields*
- *The difference between the behaviors of conductors and dielectrics in electric fields*
- *The energy stored and energy density in (i) static electric field (ii) magnetic field*
- *Electric dipole and dipole moment, magnetic dipole and dipole moment*

Course Outcomes:

After going through this course the student acquires:

- *Knowledge on basic principles, concepts and fundamental laws of electromagnetic fields.*
- *The knowledge to understand 3, dimensional coordinate systems, electrostatics, magneto statics, time, varying fields and interaction between electricity and magnetism.*

UNIT-I

INTRODUCTION TO CO-ORDINATE SYSTEMS & VECTOR ALGEBRA

Scalars & Vectors, Basic Operations in vector algebra, Co-ordinate systems, Rectangular, Cylindrical & Spherical co-ordinates and their representation in three dimensional spaces. Conversion of points and vectors from one co-ordinate system to another co-ordinate system.

UNIT-II

ELECTROSTATICS

Electrostatic Fields, Coulomb's Law, Electric Field Intensity(EFI) due to Line, Surface and Volume charges, Work Done in Moving a Point Charge in Electrostatic Field, Electric Potential due to point charges, line charges and Volume Charges, Properties of Potential unctions, Potential Gradient, Gauss's Law, Application of Gauss's Law, Maxwell's First Law, Laplace's Equation and Poisson's Equations, Solution of Laplace's Equation in one Variable. Electric Dipole, Dipole Moment, Potential and EFI due to Electric Dipole, Torque on an Electric Dipole in an Electric Field, Capacitance, Capacitance of Parallel Plate and Spherical Capacitors.

UNIT- III

CONDUCTORS AND DIELECTRICS

Behavior of Conductors in an Electric Field, Conductors and Insulators, Electric Field

Inside a Dielectric Material, Polarization, Dielectric Conductors and Dielectric Boundary Conditions, Energy Stored and Energy Density in a Static Electric Field, Current Density, Conduction and Convection, Current Densities, Ohm's Law in Point Form, Equation of Continuity.

UNIT-IV

MAGNETO STATICS

Static Magnetic Fields, Biot, Savart Law, Magnetic Field Intensity (MFI) due to a Straight Current Carrying Filament, MFI due to Circular, Square Filament, Solenoid Current Carrying Wire, Relation Between Magnetic Flux, Magnetic Flux Density and MFI, Maxwell's Second Equation. Ampere's Circuital Law and Its Applications Viz., MFI Due to an Infinite Sheet of Current and a Long Current Carrying Filament, Point Form of Ampere's Circuital Law, Maxwell's Third Equation, Magnetic Force, Moving Charges in Magnetic Fields, Lorentz Force Equation, Force on Current Element in a Magnetic Field, Force on a Straight and Long Current Carrying Conductor in a Magnetic Field, Force Between two Straight and Parallel Current Carrying Conductor in a Magnetic Field, Magnetic Dipole and Dipole moment, A Differential Current Loop as a Magnetic Dipole, Torque on a Current Loop Placed in a Magnetic Field.

UNIT-V

MAGNETIC POTENTIAL & TIME VARYING FIELDS

Scalar Magnetic Potential and Vector Magnetic Potential and its Properties, Vector magnetic Potential due to Simple Configuration, Vector Poisson's Equations, Self and Mutual Inductances, Neumann's Formulae, Determination of Self Inductance of a Solenoid and Toroid and Mutual Inductance Between a Straight, Long Wire and a Square Loop Wire in the Same Plane, Energy Stored and Intensity in a Magnetic Field. Time Varying Fields, Faraday's Law of Electromagnetic Induction, Its Integral and Point Forms, Maxwell's Fourth Equation. Statically and Dynamically Induced E.M.F's, Simple Problems, Modified Maxwell's Equations for Time Varying Fields, Displacement Current

TEXT BOOKS:

1. Engineering Electromagnetics by William.H.Hayt, Mc.Graw,Hill, 2010.
2. Field Theory, Gangadhar, Khanna Publications, 2003.

REFERENCE BOOKS:

1. Electrodynamics by Griffith, PHI, 3rd Edition, 1999.
2. Electromagnetic Fields by Sadiku, Oxford University Press, 5th Edition, 2010.
3. Electromagnetics by Joseph Edminister, Tata Mc Graw Hill, 2006.
4. Electromagnetics by J.D.Kraus, Mc.Graw,Hill Inc, 5th edition, 1999.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

L	T	C
3	1	3

(16EC411) ANALOG ELECTRONIC CIRCUITS

Course Objectives:

- *The aim of this course is to familiarize the student with the analysis and design of basic transistor amplifier circuits, Oscillators, Multi-vibrators and wave shaping.*

Course Outcomes:

On completion of this course the student will be able to understand the

- *Methods of biasing transistors & Design of simple amplifier circuits.*
- *Mid – band analysis of amplifier circuits using small - signal equivalent circuits*
To determine gain, input impedance and output impedance.
- *Method of calculating cutoff frequencies and to determine bandwidth.*
- *Design and analyse different Oscillator circuits.*
- *Design of circuits for linear wave shaping and Multi-vibrators.*

UNIT-I

Multistage Amplifiers

BJT and FET RC Coupled Amplifiers, Frequency Response. Cascaded Amplifiers. Calculation of Band Width of Single and Multistage Amplifiers. Concept of Gain Bandwidth Product.

UNIT-II

Feedback Amplifiers

Concept of Feedback Amplifiers, Effect of Negative feedback on the amplifier Characteristics, Four Feedback Amplifier Topologies, Method of Analysis of Voltage Series, Current Series, Voltage Shunt and Current Shunt feedback Amplifiers.

UNIT-III

Sinusoidal Oscillators

Condition for oscillations, LC Oscillators, Hartley, Colpitts, Clapp and Tuned Collector Oscillators, Frequency and amplitude Stability of Oscillators, Crystal Oscillators, RC Oscillators, RC Phase Shift and Weinbridge Oscillators.

UNIT-IV

Large Signal Amplifiers

Class A power Amplifier, Maximum Value of Efficiency of Class A Amplifier, Transformer coupled amplifier, Push-Pull Amplifier, Complimentary Symmetry Circuits (Transformer Less Class B Power Amplifier), Phase Inverters, Transistor Power Dissipation, Thermal Runaway, Heat Sinks.

UNIT V

Linear wave shaping: High pass, Low pass RC circuits-response for sinusoidal, Step, Pulse, Square and Ramp inputs, Clippers and Clampers.

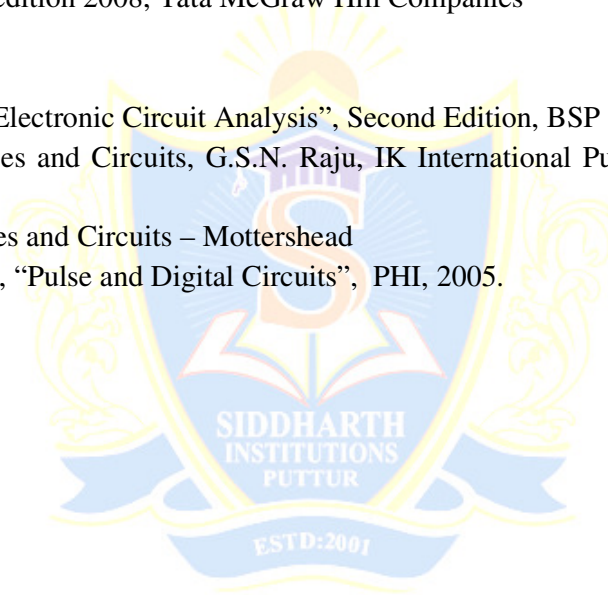
Multi-Vibrators: Analysis of Diode and transistor switching times, Analysis and Design of Bistable, Monostable and Astable Multi-vibrators, Schmitt trigger Using Transistors.

TEXT BOOKS:

1. Integrated Electronics – Millman and Halkias
2. Pulse, Digital & Switching Waveforms by Jacob Milliman, HarbertTaub and Mothiki S Prakash Rao, 2nd edition 2008, Tata McGraw Hill Companies

REFERENCES:

1. K.Lal Kishore, “Electronic Circuit Analysis”, Second Edition, BSP
2. Electronic Devices and Circuits, G.S.N. Raju, IK International Publications, New Delhi, 2006
3. Electronic Devices and Circuits – Mottershead
4. A. Anand Kumar, “Pulse and Digital Circuits”, PHI, 2005.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

L	T	C
3	1	3

(16EE215) ELECTRICAL MACHINES-II

Course Objectives:

To make the student learn about:

- Constructional details of transformer and its operation (i) on no load (ii) on load
- Predetermination of regulation and efficiency of transformer from OC and SC test results
- Parallel operation of transformers
- Constructional details, principle of operation and the importance of slip in Induction motor operation
- The slip, torque characteristics and torque calculations of Induction motor
- Methods of starting and speed control of Induction motor

Course Outcomes:

After completing the course, the student should be able to do the following:

- Draw the equivalent circuit of transformer
- Conduct O.C, S.C tests and predetermine the regulation and efficiency of transformer
- Compute the load shared by each transformer when several transformers operate in parallel
- Draw the circle diagram of a three phase Induction motor and predetermine the performance characteristics
- Determine the starting torque, maximum torque, slip at maximum torque using given data

UNIT-I:

SINGLE PHASE TRANSFORMERS

Single Phase Transformers, Constructional Details, Types, Hysteresis and Eddy Current Losses, Emf Equation, Operation on No Load and on Load, Phasor Diagrams, Equivalent Circuit, Losses and Efficiency, Regulation. All Day Efficiency, Effect of Variations of Frequency & Supply Voltage on Iron Losses.

UNIT-II:

PERFORMANCE OF SINGLE PHASE TRANSFORMERS

OC and SC Tests, Sumpner's Test, Predetermination of Efficiency and Regulation, Separation of Losses Test, Parallel Operation with Equal and Unequal Voltage Ratios, Auto Transformers, Equivalent Circuit, Comparison with Two Winding Transformers.

UNIT-III:**THREE PHASE TRANSFORMERS AND INDUCTION MOTORS**

Three Phase Transformers, Connections, Y/Y, Y/ Δ , Δ /Y, Δ / Δ and Open Δ , Third Harmonics in Phase Voltages, Three Winding Transformers, Tertiary Windings, Scott Connection.

Polyphase Induction Motors, Construction Details of Cage and Wound Rotor Machines, Production of a Rotating Magnetic Field, Principle of Operation, Rotor Emf and Rotor Frequency, Rotor Reactance, Rotor Current and Pf at Standstill and During Operation.

UNIT-IV:**3-PHASE INDUCTION MOTOR CHARACTERISTICS**

Rotor Power Input, Rotor Copper Loss and Mechanical Power Developed and Their Inter Relation, Torque Equation, Deduction From Torque Equation, Expressions for Maximum Torque and Starting Torque, Torque Slip Characteristic, Generator Operation, Double Cage and Deep Bar Rotors, Equivalent Circuit, Phasor Diagram, Crawling and Cogging, Circle Diagram, No Load and Blocked Rotor Tests, Predetermination of Performance.

UNIT-V:**STARTING AND SPEED CONTROL OF INDUCTION MOTORS**

Starting Methods and Starting Current and Torque Calculations, Speed Control, Change of Frequency, Pole Changing and Methods of Consequent Poles, Cascade Connection, Injection of an EMF induction generator, principle of operation

TEXT BOOKS:

1. Electrical Machinery & Transformers by Irving Kosow –Pearson Publishers, Second Edition, 2012
2. Electric Machines –by I.J.Nagrath & D.P.Kothari, Tata Mc Graw Hill, 7th Edition.,2005
3. Electrical machines, PS Bimbira, Khanna Publishers.

REFERENCE BOOKS:

1. Performance and Design of AC Machines by MG.Say, BPB Publishers, 2002.
2. Theory of Alternating Current Machinery, by Langsdorf, Tata McGraw, Hill Companies, 2nd edition, 2008
3. Electromechanics, II (transformers and induction motors) S. Kamakshaiiah, Hitech Publishers, 2005
4. Electric Machinery, A.E. Fitzgerald, C.Kingsley and S.Humans, Mcgraw Hill Companies, 6th edition, 2003

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

**P C
4 2**

(16EE217) ELECTRICAL MACHINES-I LAB

Course Objectives:

The student has to learn about:

- *No load and load characteristics of DC generators*
- *Various tests on DC motors*
- *The speed control techniques of DC motors*
-

Course Outcomes:

The student should be able to do the following:

- *Conduct experiments to obtain the no, load and load characteristics of D.C. Generators*
- *Conduct tests on D.C. motors for predetermination of efficiency*
- *Conduct tests on D.C. motors for determination of efficiency*
- *Control the speed of D.C. motor in a given range using appropriate method*
- *Identify the reason as to why D.C. Generator is not building up voltage*

Minimum of Ten Experiments should be conducted from the following List:

1. Study of DC machine parts (identification of armature, field windings, brushes, Commutator etc.,) And finding Armature resistance R_a .
2. Load Test on DC Shunt Generator. Determination of Characteristics.
3. Brake Test on DC Shunt Motor. Determination of Performance Curves.
4. Load Test on DC Compound Generator. Determination of Characteristics.
5. Magnetization Characteristics of DC Shunt Generator. Determination of Critical Field Resistance and Critical Speed.
6. Fields Test on DC Series Machines. Determination of Efficiency.
7. Swinburne's Test
8. Brake Test on DC Compound Motor. Determination of Performance Curves.
9. Load Test on DC Series Generator. Determination of Characteristics.
10. Retardation Test on DC Shunt Motor. Determination of Losses at Rated Speed.
11. Separation of Losses in DC Shunt Motor.
12. Speed Control of DC Shunt Motor
13. Hopkinson's Test on DC Shunt Machines. Predetermination of Efficiency.

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

P C
4 2

(16EC414) ANALOG ELECTRONIC CIRCUITS LAB

Course Objectives:

- *Help students make transition from analysis of electronic circuits to design of electronic circuits.*
- *To understand the Analysis of transistor at high frequencies.*
- *To understand the concept of designing of tuned amplifier.*
- *The student will construct and analyze voltage regulator circuits*
- *To understand Different types of linear wave shaping circuits.*
- *To understand and processing of Non Linear wave shaping circuits.*
- *To learn about Limiting and storage circuits and their applications*

Course Outcomes:

- *The ability to analyze and design single and multistage amplifiers at low, mid and high frequencies.*
- *Designing and analyzing the transistor at high frequencies*
- *To understands Different types of linear wave shaping circuits.*
- *To understand and processing of Non Linear wave shaping circuits*
- *To learn about Limiting and storage circuits and their applications*

Minimum of Ten Experiments to be conducted

1. Common Emitter Amplifier
2. Common Source Amplifier
3. A Two Stage RC Coupled Amplifier.
4. Current shunt and Voltage Series Feedback Amplifier
5. Cascade Amplifier
6. Wien Bridge Oscillator using Transistors
7. RC Phase Shift Oscillator using Transistors
8. Linear wave shaping.
9. Non Linear wave shaping – Clippers.
10. Non Linear wave shaping – Clampers.
11. Astable Multivibrator.
12. Monostable Multivibrator.

Components Required:

Regulated Power Supply (0-30V)
CRO's
Functions Generators.
Multimeters.
Components

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B.Tech. - II Sem. (E.E.E)

**P C
4 2**

**(16CE116) FLUID MECHANICS AND HYDRAULIC MACHINERY LAB
(Common to CE & ME)**

Course Objectives:

- *To learn the concepts of Venturimeter & Orifice meter*
- *To learn the concepts of notch's*
- *To learn the basic concepts of turbines*
- *To learn the basics concepts of different types of pumps.*

Course Outcomes:

Students undergoing this course are able to

- *Calibrate Venturimeter & Orifice meter*
- *Calculate losses in flows*
- *Estimate the efficiency of different pumps.*
- *Study the performance of different turbines.*

LIST OF EXPERIMENTS

***Cycle 1:**

1. Verification of Bernoulli's equation.
2. Calibration of Coefficient of discharge for Venturimeter.
3. Calibration of Coefficient of discharge for Orifice meter.
4. Calibration of Friction factor. (major losses experiment)
5. Determination of loss of head due to sudden contraction. (minor losses experiment)
6. Calibration of Discharge over Notches (Rectangular/Triangular Notch.)
7. Determination of Coefficient of discharge for a small orifice / mouthpiece by a constant head method / variable head method.

***Cycle 2:**

8. Impact of jet on vanes.
9. Performance test on Pelton wheel turbine.
10. Performance test on Francis turbine.
11. Efficiency test on centrifugal pump.
12. Study on Hydraulic jump.
13. Performance test on Kaplan turbine

***Minimum Four experiments** must be conducted in the lab from each cycle.

LIST OF EQUIPMENT:

1. Venturimeter Setup.
2. Orifice meter setup.
3. Friction factor and Minor losses test setup.
4. Impact of jets.
5. Pelton wheel and Francis turbines.
6. Centrifugal pumps.
7. Bernoulli's theorem setup.
8. Hydraulic jump test setup.
9. Kaplan turbine.
10. Rectangular and Triangular notch setups
11. Small orifice and mouth piece setup.



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B. Tech -II Sem. (E.E.E.)	L	T	C
	0	0	1

(COE-II) COMPREHENSIVE ONLINE EXAMINATION -II

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)**

II B. Tech -II Sem. (E.E.E.)	L
	3

**(16HS614) COMPREHENSIVE SOFT-SKILLS
(AUDIT COURSE)
(Common to All Branches)**

Course Description:

Soft Skills is an intangible idea in which the qualities like attitude, ability, integrity, reliability, positivity, flexibility, dependability, punctuality, management, cooperation, habits and practices are combined proficiently to capitalize on a person's work efficacy. Soft Skills do the work of combining all these components in accurate share into skills and shaping them into competencies. Companies opt for, maintain and prop up persons, who are trustworthy, ingenious, principled and good communicators and who are prepared to work under stress. These lessons are developed with a view to create awareness of the importance of the soft skills and assist the learners to improve them.

Course Objectives:

The main objectives of this course are:

- To help the students understand interpersonal skills.
- To support them in building interpersonal skills.
- To enhance the ability to work with others.

Course Outcomes:

- To know the importance of Soft Skills.
- To apply Soft Skills in the different environment.
- To enrich the different levels of Soft Skills to develop their personality.

UNIT I

Non verbal Communication – Body Cues – Smiling, Posture, Gesture, Eye-contact – Stage appearance – Interpersonal and Intrapersonal skill Telephonic Etiquette – Dos and Don'ts of Telephonic Conversation

UNIT II

Self exploration – Self Discovery – Self acceptance – Self esteem – Self confidence – Personal grooming – Attitudes – Confidence building. Interpersonal relationship in the present context – Kinds of relationships – Team building – Formation of team

UNIT III

Vision and Goal setting – Personal goal – Career goal – Types of Organization – Deep dive of company profiles – Win-win situation – Proactive skills – Entrepreneurial skills and model start-ups- Developing Mind skills – quizzes – General knowledge – Puzzles – Reading Comprehension - Spell Bee - Seminar – Who is who? – Biographies

UNIT IV

Flight Leadership: Assessing Leadership qualities – Experiential learning of leadership skills exercise in team work Time and Stress Management: Importance of Time Management – The art of prioritizing and scheduling – Stress and Source of Stress Types of Stress – Managing stress

UNIT V

Change: Coping skills – Critical and Adaptive Mindsets – Changes in Career/ Life/ people – Just A Minute – Mock GDs and Mock Interviews

REFERENCES:

1. *Business Communication*, Aruna Koneru
2. *Effective Tech Communication*, Rizvi, Tata McGraw – Hill Education, 2007.
3. *Reading Extra*, Liz Driscoll, Cambridge University Press, 2004.
4. *Speak Well*, Jayashree Mohanraj et al, Orient Blackswan, 2013.