SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY
(AUTONOMOUS)

Department of Electronics & Communications Engineering

I B. Tech. – I Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P/Drg	C
1.	18HS0830	Mathematics-I	3	0	0	3
2.	18HS0801	Chemistry	3	1	0	4
3.	18ME0302	Engineering Graphics & Design	1	0	4	3
4.	18HS0810	English	3	0	0	3
5.	18HS0802	Chemistry lab	0	0	3	1.5
6.	18HS0811	English Lab	0	0	3	1.5
7.	18ME0301	Workshop Practice Lab	0	0	4	2
		Induction Program (3 Weeks)	0	0	0	0
Contact Periods / Week			10	1	14	18
			Total/Week 25			

I B. Tech. – II Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P	C
1.	18HS0831	Mathematics-II	3	1	0	4
2.	18HS0851	Semiconductor Physics	3	1	0	4
3.	18EE0239	Basic Electrical Engineering	3	0	0	3
4.	18CS0501	Programming For Problem Solving	3	0	0	3
5.	18CE0101	Engineering Mechanics	2	1	0	3
6.	18HS0852	Physics Lab	0	0	3	1.5
7.	18CS0503	Programming For Problem Solving Lab	0	0	3	1.5
Non -Credit Courses						
8.	18HS0817	Essence of Indian Traditional Knowledge	3	0	0	0
Contact Periods / Week			17	3	6	20
			Total/Week 26			

II B. Tech. – I Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P	C
1.	18HS0834	Mathematics-III	3	1	0	4
2.	18EC0401	Electronic Devices	3	0	0	3
3.	18EC0402	Digital System Design	3	0	0	3
4.	18EC0403	Signals & Systems	3	0	0	3
5.	18EE0242	Network Theory	3	0	0	3
6.	18EC0404	Electronic Devices Lab	0	0	3	1.5
7.	18EC0405	Digital System Design Lab	0	0	2	1
8.	18EC0406	Signals and Systems Simulation Lab	0	0	3	1.5
Non -Credit Courses						
9.	18HS0816	Indian Constitution	3	0	0	0
Contact Periods / Week			18	1	8	20
			Total/Week 27			

II B. Tech. – II Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P	C
1.	18EC0407	Analog Circuits	3	0	0	3
2.	18EC0408	Analog Communications	3	0	0	3
3.	18EC0409	Probability Theory and Stochastic Processes	3	1	0	4
4.	18HS0812	Managerial Economics and Financial Analysis	3	0	0	3
5.	18HS0803	Biology for Engineers	3	0	0	3
6.	18EC0410	Analog Circuits Lab	0	0	3	1.5
7.	18EC0411	Analog Communications Lab	0	0	3	1.5
Credit Courses						
8.	COE-I	Comprehensive Online Exam-I	0	0	0	1
Non -Credit Courses						
9.	18HS0804	Environmental Sciences	3	0	0	0
Contact Periods / Week			18	1	6	20
			Total/Week 25			

III B.Tech– I Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P	C
1.	18EC0412	Electromagnetic Waves	3	0	0	3
2.	18CS0555	Computer Architecture	3	0	0	3
3.	18EC0413	Digital Signal Processing	3	0	0	3
4.	18EC0414	Microprocessor and Microcontrollers	3	0	0	3
5.	18EE0211	Control Systems	3	1	0	4
6.	18EC0415	Electromagnetic Waves Lab	0	0	2	1
7.	18EC0416	Digital Signal Processing Lab	0	0	3	1.5
8.	18EC0417	Electronics Measurement Lab	0	0	3	1.5
Non -Credit Courses						
9.	18HS0842	Aptitude Practices	3	0	0	0
Contact Periods / Week			18	1	8	20
			Total/Week 27			

III B. Tech – II Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P	C
1.	18CS0515	Computer Networks	3	0	0	3
2.	18EC0418	Antennas and Wave Propagation	3	0	0	3
3.	18EC0419	Digital Communication	3	0	0	3
Professional Elective Course (PEC) -I						
4.	18EC0427	CMOS Design	3	0	0	3
	18EC0428	Information Theory and Coding				
	18EC0429	Scientific Computing				
MOOCS-I						
5.	18EC0420	Digital Communication Lab	0	0	2	1
6.	18EC0421	Antennas and Wave Propagation Lab	0	0	2	1
7.	18EC0424	Internship (60 Hours)	0	0	0	2
Credit Courses						
8.	COE-II	Comprehensive Online Exam-II	0	0	0	1
Non -Credit Courses						
9.	18HS0820	Comprehensive Soft skills	3	0	0	0
Contact Periods / Week			18	0	4	20
			Total/Week 22			

IV B.Tech – I Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P	C
1.	18HS0813	Management Science	3	0	0	3
Professional Elective Course (PEC) –II						
2.	18EC0430	Microwave Theory and Techniques	3	0	0	3
	18EC0431	Fiber Optic Communication				
	18EC0432	Satellite Communication				
Professional Elective Course (PEC) –III						
3.	18EC0433	Embedded Systems	3	0	0	3
	18EC0434	Digital Image Processing				
	18CS0542	Cryptography and Network Security				
Professional Elective Course (PEC) –IV						
4.	18EC0435	Mobile Communication and Networks	3	0	0	3
	18EC0436	Wavelets				
	18EC0437	Bio-Medical Electronics				
MOOCS-II						
5.	18EC0422	Microcontroller System Design Lab	0	0	3	1.5
6.	18EC0423	Electronic Design Workshop	0	0	3	1.5
7.	18EC0425	Project Phase-I	0	0	4	2
Contact Periods / Week			15	0	10	20
			Total/Week 25			

IV B.Tech – II Semester (E.C.E)

S.No.	Course Code	Subject	L	T	P	C
Professional Elective Course (PEC) –V						
1.	18EE0206	Power Electronics	3	0	0	3
	18EC0438	Speech and Audio Processing				
	18EC0439	Nano Electronics				
Professional Elective Course (PEC) –VI						
2.	18EC0440	Adaptive Signal Processing	3	0	0	3
	18EC0441	Error Correcting Codes				
	18EC0442	Mixed Signal Design				
Open Elective-I						
3.	18CE0154	Elements of Road Traffic Safety	3	0	0	3
	18EE0238	Neural Networks and Fuzzy Logic				
	18ME0307	Non Conventional Energy Resources				
	18CS0553	Web Designing and Internet Applications				
	18HS0814	Intellectual Property Rights				
Open Elective-II						
4.	18CE0155	Construction Project Management	3	0	0	3
	18EE0236	Electrical Energy Conservation and Auditing				
	18ME0330	Automobile Engineering				
	18CS0554	Cyber Laws & Ethics				
	18HS0815	Entrepreneurships Development				
5.	18EC0426	Project Phase-II	0	0	16	8
Contact Periods / Week			12	0	16	20
			Total/Week 28			

TOTAL CREDITS= 18+20+20+20+20+20+20+20=158

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0830) MATHEMATICS-I

(Common to all branches)

I B. Tech -I Sem. (E.C.E.)	**L**	**T**	**C**
	3	**0**	**3**

Course Objectives:

The objective of this course is to familiarize the prospective engineers with techniques in calculus, multivariate analysis and linear algebra. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines. More precisely, the objectives are:

- To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic introduction on Beta and Gamma functions.
- To introduce the fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
- To develop the tool of power series and Fourier series for learning advanced Engineering Mathematics.
- To familiarize the student with functions of several variables that is essential in most branches of engineering.
- To develop the essential tool of matrices and linear algebra in a comprehensive manner.

Course Outcomes:

The objective of this course is to familiarize the prospective engineers with techniques in calculus, multivariate analysis and linear algebra. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.

UNIT – I

Matrices: Inverse and rank of a matrix; System of linear equations; Symmetric, skew-symmetric and orthogonal matrices; Eigen values and eigen vectors; Diagonalization of matrices; Cayley-Hamilton Theorem, and Orthogonal transformation.

UNIT – II

Calculus: Evaluation of definite and improper integrals; Applications of definite integrals to evaluate surface areas and volumes of revolutions; Beta and Gamma functions and their properties. Rolle's Theorem, Mean value theorems (without proof) Taylor's and Maclaurin's theorems.

UNIT – III

Multivariable Calculus *(Differentiation):* Limit, continuity and partial derivatives, total derivative; Maxima, minima and saddle points; Method of Lagrange multipliers; Gradient, directional derivatives, curl and divergence.

UNIT – IV

Sequences and Series: Convergence of sequence and series, tests for convergence (Geometric test, P- test, limit comparison test, D' Alember ratio test, Cauchy' s nth root test), Power series, Taylor's series, series for exponential, trigonometric and logarithm functions.

UNIT-V

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.

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
3. *A Text book of B.Sc. mathematics* volume-II, V.Venkateswara Rao S.Chand Publications

References:

1. *Higher Engineering Mathematics* Ramana B.V., Tata McGraw Hill New Delhi, 11th Reprint, 2010.
2. *Engineering Mathematics*, volume-I&II, E.Rukmangadachari & E.Keshava Reddy Pearson Publishers.
3. *Linear Algebra A Modern Introduction* D. Poole,:, 2nd Edition, Brooks/Cole, 2005.
4. *A text book of Engineering Mathematics* N.P. Bali and Manish Goyal, , Laxmi Publications, Reprint, 2008.
5. *Linear Algebra & Vector Calculus* Bhavanari Satyanarayana, T.V.Pradeep kumar & D.Srinivasulu "", Studera Press, New Delhi.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0801) CHEMISTRY

(Common to all Branches)

I B. Tech -I Sem. (E.C.E.)	L	T	C
	3	1	4

Course Objectives:

- Developed in this course will aid in quantification of several concepts in chemistry that have been introduced at the 10+2 levels in schools.
- Technology is being increasingly based on the electronic, atomic and molecular level modifications.
- Quantum theory is more than 100 years old and to understand phenomena at Nanometer levels, one has to base the description of all chemical processes at molecular levels.

Course Outcomes:

- Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
- 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 Rationalise bulk properties and processes using thermodynamic considerations.
- Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.

UNIT I

ATOMIC, MOLECULAR STRUCTURE AND PERIODIC PROPERTIES: Schrodinger wave equation, Molecular orbital's of diatomic molecules. Energy level diagrams of diatomic. Pi-molecular orbitals of butadiene and benzene and aromaticity. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties. Effective Nuclear charge, variations of s, p, d and f orbital energies of atoms in the periodic table, atomic and ionic sizes, oxidation states, hard soft acids and bases, molecular geometries.

UNIT II

USES OF FREE ENERGY AND CHEMICAL EQUILIBRIA: Thermodynamic functions: Energy Entropy and free energy, Cell potentials, Nernest equations and Its Applications. Acid base Oxidation, reduction and Solubility Equilibria.

CORROSION: Types of Corrosion, Factors Influencing the rate of Corrosion, Prevention of Corrosion (Sacrificial anodic protection, Impressed Cathodic Protection), Anodic and Cathodic Inhibitors, Electro plating (Copper, Nickel, Chromium) and Electroless Plating.

UNIT-III

WATER TECHNOLOGY: Hardness of water and its units, Estimation of Hardness by EDTA method. Boiler Troubles: Scale & Sludge, Priming and Foaming and Boiler corrosion. Municipal Solid waste water Treatment. Break point chlorination, Water softening methods (Lime-Soda, Zeolite, Ion- Exchange resins). Demineralization of Brackish Water: Reverse Osmosis and Electro Dialysis.

UNIT-IV

ORGANIC REACTIONS AND ORGANIC POLYMERS: Introduction to reactions involving substitution, addition, elimination, oxidation, reduction, Synthesis of a commonly used drug molecules (Paracetamol, Penicillin, Prodrugs - Asprin, Sulfa drugs)

Organic polymers types (Thermosetting and Thermoplastics), Preparation, Properties and Engineering Applications of PVC, Teflon, Nylon6,6, Bakelite), Moulding Process and its uses, Conducting polymers (polyacetylene, Polyaniline).

UNIT-V

SPECTROSCOPIC TECHNIQUES AND APPLICATIONS: Principles, selection rules and applications of absorption (UV/Visible, Atomic Absorption, Infrared) and Emission spectroscopy (Flame photometry and Fluorescence and its applications in medicine. Advanced Instrumental Techniques and their Significance: XRD, Scanning Electron microscope (SEM) and Transmission electron microscopy (TEM).

Text Books

1. *University chemistry*, by B. H. Mahan
2. *Chemistry: Principles and Applications*, by M. J. Sienko and R. A. Plane
3. *Fundamentals of Molecular Spectroscopy*, by C. N. Banwell
4. *Engineering Chemistry (NPTEL Web-book)*, by B. L. Tembe, Kamaluddin and M. S. Krishnan
5. *Physical Chemistry*, by P. W. Atkins
6. *Organic Chemistry*: Structure and Function by K. P. C. Volhardt and N. E. Schore, 5th Edition http://bcs.whfreeman.com/vollhardtschore5e/default.asp

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18ME0302)ENGINEERING GRAPHICS & DESIGN

I B. Tech -I Sem. (E.C.E.)	L	P	C
	1	4	3

Course Objectives:

- To familiarize the students in basic concept of conic sections, projections and Development 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

UNIT-I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their significance, usage of Drawing instruments, lettering, Conic sections, Cycloids and Involutes.

UNIT-II

Projections of Points: Principles of Orthographic Projections-Conventions - Projections of Points, Traces

Projections of straight lines: Inclined to both the planes - simple problems only, Traces

UNIT-III

Projections of Planes: Planes (Inclined to single plane only)

Projections of Solids: Introduction– Projections of right regular solids-Prisms, Pyramids in different positions. (Single plane only)

UNIT-IV

Sections of solids: Sectional Views of Right regular Solids - Prisms, Pyramids.

Development of surfaces: Development of surfaces of Right Regular Solids - Prisms, Pyramids.

UNIT-V

Orthographic Projections: Principles of Orthographic projection, Conversion of objects from 3D to 2D

Isometric Projections: Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids, Conversion of 2D to 3D.

Auto CAD (for Practice only not for External Exam)

Introduction to CAD, Applications, commands, Tool bar, modeling of Simple parts, isometric problems.

Text Books:

1. *Engineering Drawing*, N.D.Bhatt, Charotar Publishers
2. *A text Book of Engineering Drawing*, K.L.Narayana, Kannaiah, Scitech Publishers, 2010
3. *Engineering Graphics with using AutoCAD,2007*. Jeyapoovan.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 Publishin New Delhi, 2008.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0810) ENGLISH
(Common to all branches)

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

L	T	C
3	0	3

Course Objectives:

- To develop interest in reading English Literature for language learning.
- To improve knowledge and understanding of Grammar.
- To enhance the ability for making use of grammar in writing English.
- To enrich communication skills among the students.
- To develop their insight and positive attitude towards English language.
- To impart LSRW skills and inculcate the habit of learning.
- To build vocabulary.
- To enhance employability skills.

Course Outcomes
Students will be able:
1. To understand the rules of English grammar and their usage in writing English.
2. To use LSRW skills through the prescribed text and develop their ability to communicate effectively.
3. To get the mastery of language to express ideas, views, feelings and experience.
4. To communicate well among themselves.
5. To inculcate values and ideal characteristic qualities in themselves.

UNIT: I
Reading:
1. *All the World's a Stage* by William Shakespeare. (Act-II, Scene-VII).
2. *After Twenty Years* by O. Henry.

Writing: Nature and Style of Sensible Writing: Describing & Defining.
Speaking: Oral Communication (involves interactive practice sessions) Self -introduction and introducing a friend.
Listening: Listening activity (Present tense).
Vocabulary: The concept of word formation & root words from foreign languages.
Grammar: Subject – Verb Agreement. Sentence Structures & use of phrases and clauses in sentences. Identifying common errors in noun, pronoun and adjectives.

UNIT:II
Reading:
1. *I Have a Dream* Martin Luther King jr.
2. *Knowledge and Wisdom* by Bertrand Russell.

Writing: Importance of proper punctuation and creating coherence- Simple sentences.
Speaking: Expressing apology.
Listening: Listening activity. (Past tense)
Vocabulary: Prefixes and Suffixes.
Grammar: Identifying common errors in Articles, Modifiers and degrees of comparison.

UNIT: III

Reading:

1) Nelson Mandela (Biography)
2) "The Happy Prince" by Oscar wilde.

Writing: Paragraph writing – letter writing.

Speaking: Situational dialogues.

Listening: Listening activity. (Future tense)

Vocabulary: Synonyms and Antonyms.

Grammar: Identifying common errors in Prepositions and Link words and complex sentences.

UNIT:IV

Reading:

1. *Where the Mind is without Fear* by Rabindra Nath Tagore.
2. Cause - Effect and Control Measures of Pollution (Air, Water, Noise) and Nuclear Hazards.

Writing: Essay writing - Organizing principles of essay writing - Introduction and Conclusion.

Speaking: Public speaking dynamics.

Listening: Listening activity. (Active voice and passive voice)

Vocabulary: Abbreviations and Acronyms.

Grammar: Identifying common errors in redundancies and compound sentences.

UNIT-V

Reading:

1. *The Road not Taken* by Robert Frost.
2. *An Astrologer's Day* by R K Narayan.

Writing: Techniques for writing precisely.

Speaking: Interviews and formal presentations.

Listening: speeches of A P J Abdul Kalam, Steve Jobs and so on.

Vocabulary: One word substitutes.

Grammar: Identifying common errors in clichés.

Reference Books:

1. *Practical English Usage.* Michael Swan. OUP. 1995.
2. *Remedial English Grammar.* F.T. Wood. Macmillan. 2007.
3. *On Writing Well.* William Zinsser. Harper Resource Book, 200.
4. *Study Writing.* Liz Hamp-Lyons and Ben Heasly. Cambridge University Press, 2006.
5. *Communication Skills*. Sanjay Kumar and Pushp Lata. Oxford University Press, 2011.
6. *Exercises in Spoken English.* Parts. I-III. CIEFL, Hyd. Oxford University Press, 2005.
7. *Oscar Wilde*, Create Independence Publisher, Kindle Edition, 2017.
8. *The Complete Works of William Shakespeare*, Kindle Edition, 2017.
9. G. P. Editors, The Complete Works of William Shakespeare, Global Classic, 2018.
10. *Robert Frost*, Robert Frost Collection, Wider Publication, 2011.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0802) CHEMISTRY LABORATORY

(Common to all Branches)

I B. Tech -I Sem. (E.C.E.)	P	C
	3	1.5

Laboratory Outcomes

The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:

- Estimate rate constants of reactions from concentration of reactants/products as a function of time.
- Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc.
- Synthesize a small drug molecule and analyse a salt sample.

List Of experiments

1. Estimation of copper by EDTA method
2. Determination of chloride content of water
3. Determination of acidity of water sample.
4. Determination of alkalinity of water sample
5. Potentiometric determination of Fe2+ by potassium permanganate.
6. Determination of Viscosity of an oil by Redwood Viscometer
7. Determination of dissolved oxygen in a water sample by Winkler's method
8. Conductometric titrations of strong acid against strong base.
9. Chemical analysis of a salt
10. Synthesis of a polymer/drug Choice of 10-12 experiments from the following:

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0811) ENGLISH LAB

(Common to all branches)

I B. Tech -I Sem. (E.C.E.) **P C**

3 1.5

Course Objectives:

To get the job students dream of today largely depends on the way they communicate. Due to globalization, civilization and fast growing technologies, communication has become a very important factor. Good communication skills increase the possibilities of getting good jobs. To meet the requirement of corporate word one has to be capable of expressing oneself.

- To provide Computer Assisted Language Learning facility for the students on self-instructional method for improving language.
- To improve the correct articulation as English is international language.
- To enhance the communication skills with a variety of activities and practice sessions.
-

Course Outcomes:

Students will be able:

1. To recognize sounds of English language with different classifications.
2. To know phonetic transcription and phonemic symbols of English language.
3. To understand international accent and utilize the same in their daily conversation.
4. To crease confidence for public speaking, for facing interviews, for making effective oral presentations, for having discussions, and for delivering impromptu speeches.

Unit -1

a) Importance of Phonetics – Introduction, organs of speech, classification of sounds, and Phonetic transcriptions.

Unit-2

a) Syllable, Syllabification, Word stress, Stress Rules and Intonation.
b) Intonation (Falling, Raising, and fall-raise) - Pitch and Rhythm.
c) Influence of mother tongue (MTI) - Common Indian Variants in pronunciation.
d) Difference between British and American Pronunciation

Unit- 3

a) Vocabulary building.
b) Functional English; Telephone skills; Giving Directions; Situational dialogues; Role play.
c) JAM, Oral presentation-Prepared and extempore and PPT presentation.

Unit- 4:

a) Describing people, places, things and situations- Body language–- listening some

Unit- 5

a) Preparation of resume (C.V) & Cover Letter.
b) Interview Skills - mock interviews.
c) Group Discussion, Debate and Dress code.

Minimum requirement for ELCS LAB

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 1(sky pronunciation)
2. Clarity pronunciation power--- Part 2
3. K-Van Advanced Communication Skills.
4. Walden Info tech Software.

References Books:

1. *A Textbook of English Phonetics for Indian Students,* second edition T. Balasubramanian. (Mcmillian) 2012.
2. *A Course in Phonetics and spoken English*, DhamijaSethi, Prentice-hall of India Pvt. Ltd, 2000.
3. *Speaking English Effectively,* second Edition Krishna Mohan & NP Singh 2011 (Mcmillian).
4. *A Hand Book of English Laboratories,* E.Sureshkumar , P.Sreehari, Foundation books, 2011.
5. *Spring Board Success*, Sharada Koshik, Bindu Bajwa, Orient Black Swan, Hyderabad, 2010.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18ME0301) WORKSHOP PRACTICE LAB

I B. Tech -I Sem. (E.C.E.) **P 4** **C 2**

Course Educational Objectives:

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

Course Outcomes:

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.

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 Dovetail 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.

Part B - IT WORKSHOP

Course Objectives:

To provide students with hands-on experience in basic hardware, productivity tools and basic operating system installations.

Course Outcomes:

After Completion of this Course the Student would be able to

- Identify the basic computer peripherals.
- Gain sufficient knowledge on assembling and disassembling a PC.
- Learn the installation procedure of Windows and Linux OS.
- Acquire knowledge on basic networking infrastructure.
- Learn productivity tools like Word, Excel and Power point.
- Acquire knowledge on basics of internet and worldwide web.

Task 1:

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

Task 2:

A practice on disassembling the components of a PC and assembling them.

Task 3:

1. Basic DOS commands, Installation of MS windows.
2. Basic Linux Commands,Installation ofLinux.

Task 4:
Hardware Troubleshooting (Demonstration): Identification of a problem and fixing the solution (improper assembly or defective peripherals). Software Troubleshooting (Demonstration): Identification of a problem and fixing the PC for any software issues

Productivity tools
Task 5:

1. **MS Word Orientation:** Accessing, overview of toolbars, saving files, Using help and resources, rulers, formatting ,Drop Cap , Applying Text effects, Using Character Spacing, using templates, Borders and Colors, Inserting Header and Footer, Using Date and Time option, security features in word, converting documents while saving

2. **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.

3. **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.

Task 6:
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. Crimpling activity, logical configuration etc should be done by the student. The entire process has to be documented.

REFERENCES:

1. Introduction to Computers, Peter Norton, McGraw Hill
2. MOS study guide for word, Excel, PowerPoint & amp; 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 & amp; Repairing PCs", Bigelows, TMH

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0831) MATHEMATICS-II

(Common to all branches)

I B. Tech -II Sem. (E.C.E.)	L	T	C
	3	1	4

Course Objectives:

The objective of this course is to familiarize the prospective engineers with techniques in Multivariate integration, ordinary and partial differential equations and complex variables. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines. More precisely, the objectives are:

- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.
- To introduce effective mathematical tools for the solutions of differential equations that model physical processes.
- To introduce the tools of differentiation and integration of functions of complex variable that are used in various techniques dealing engineering problems.

Course Outcomes:

The objective of this course is to familiarize the prospective engineers with techniques in calculus, multivariable calculus and complex analysis. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of Mathematics and applications that they would find useful in their disciplines.

UNIT I

FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS: Exact, linear and Bernoulli's equations, Euler's equations, Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT II

ORDINARY DIFFERENTIAL EQUATIONS OF HIGHER ORDERS: Second order linear differential equations with variable coefficients, method of variation of parameters, Cauchy-Euler equation; Power series solutions; Legendre polynomials, Bessel functions of the first kind and their properties.

UNIT III

MULTIVARIABLE CALCULUS (INTEGRATION): Multiple Integration: Double integrals (Cartesian), change of order of integration in double integrals, Change of variables (Cartesian to polar), Applications: areas and volumes, Triple integrals (Cartesian), orthogonal curvilinear coordinates.

UNIT IV

COMPLEX VARIABLE – DIFFERENTIATION: Differentiation, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; elementary analytic functions (exponential, trigonometric, logarithm) and their properties; Conformal mappings, Mobius transformations and their properties.

UNIT V

Complex Variable Integration: Contour integrals, Cauchy-Goursat theorem (without proof), Cauchy Integral formula (without proof), Taylor's series, zeros of analytic functions, singularities, Laurent's series; Residues, Cauchy Residue theorem (without proof), Evaluation of definite integral involving sine and cosine.

Text Books:

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

Reference Books:

1. *Engineering Mathematics*, volume-I&III, E. Rukmangadachari & E.Keshava Reddy Pearson Publishers
2. *Higher Engineering Mathematics* Ramana B.V., Tata McGraw Hill New Delhi, 11thReprint, 2010.
3. *Engineering Mathematics-I & III*, T.K.V.Iyengar S.Chand Publications.
4. *A Modern Introduction* D. Poole, Linear Algebra:, 2nd Edition, Brooks/Cole, 2005.
5. *A text book of Engineering Mathematics* N.P. Bali and Manish Goyal, , Laxmi Publications, Reprint, 2008.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0851) SEMICONDUCTOR PHYSICS

(Common for ECE, CSE and CS&IT**)**

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

L	**T**	**C**
3	**1**	**4**

Objectives:

- Basic concepts of free electron theory and energy bands in solids.
- Key points, formation and importance of semiconductors.
- Will Understanding working principles and applications of optoelectronic devices.
- Will recognize the basic concepts related properties of Lasers and Optical Fibers..
- To understand the fundamentals Nano materials.

Course outcomes:

- Would understand the basic concepts of free electron theory and energy bands in solids.
- Able to deliver importance of semiconductors.
- Would understand working principles and applications of optoelectronic devices.
- Able to explain concepts related to Lasers and Optical fibers. .
- Understand the importance of Nanotechnology.

UNIT – I

ELECTRONIC MATERIALS: Free electron theory, density of states and energy band diagrams – Energy bands in solids – E – K band diagram, direct and indirect band gaps, types of electronic materials: metals, semiconductors and insulators – occupation probability – Fermi level – effective mass.

UNIT – II

SEMICONDUCTORS: Intrinsic and Extrinsic semiconductors – Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics) - Carrier generation and recombination - Carrier transport: diffusion and drift -Hall Effect- p -n junction – Metal semiconductors junction-Ohmic and Schottky Junctions.

UNIT –III

LIGHT EMITING DIODE (LED) & PHOTODETECTORS: Rate equations for carrier density – radiative and non - radiative recombination mechanisms in semiconductors – LED: structure, materials, characteristics and figure of merits.

Photo detectors – PIN and Avalanche diode and their structure, materials working principle and characteristics – Solar cell.- Principle and characteristics

UNIT – IV

LASERS AND FIBER OPTICS: Characteristics of laser beams, Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, different types of lasers: Semiconductor laser, applications of lasers in science, engineering and medicine.

Principle of fiber optics – acceptance angle and numerical aperture – types of fibre cables-loses in fiber optics – optical fiber communication system - applications of fiber optics.

UNIT-V

PHYSICS OF NANOMATERIALS: Introduction, significance of nano scale – surface area and quantum confinement- Quantum dot, Quantum well , Quantum wire -Synthesis of nano materials- Top Down Process- Ball Milling ; Bottom Up Process: Sol-Gel method– CNT-Properties of Graphene- Applications.

Reference books:

1. *Semiconductor optoelectronics, Physics and Technology* J. Singh, , McGraw-Hill Inc. (1995).
2. *Semiconductor devices: Physics and Technology* S.M. Sze, , Wiley (2008).
3. *Semiconductor optoelectronic devices* P. Bhattacharya, , Prentice Hall of India (1997).
4. *Fundamentals of photonics* B.E.A. Saleh and M.C, Tech, , John Wiley & Sons.
5. *Engineering Physics* – K.Thyagarajan, MCGrawHill Education Private Ltd, New Delhi.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EE0239) BASIC ELECTRICAL ENGINEERING

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

L	P	C
3	0	3

Course Objectives:

To make the student learn about:

- To understand the nature of different circuit elements, fundamental laws and network Theorems.
- Understand the operation of dc machines and single phase transformers.

Course Outcomes:

Upon completion of the course, students will:

- Determine the equivalent impedance of given network by using network reduction techniques.
- Determine the current through any element and voltage across any element
- Apply the network theorems suitably.
- Analyze the operating principles of electrical machines and transformer.

UNIT-I

DC Circuits : Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

UNIT-II

AC Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), Resonance. Three-phase balanced circuits, voltage and current relations in star and delta connections.

UNIT-III

Transformers : Magnetic materials, BH characteristics, ideal and practical transformer, Equivalent circuit,losses in transformers, Regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV

Electrical Machines : Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, Starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and Working of synchronous generators.

UNIT-V

Electrical Installations: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, Power factor improvement and battery backup.

Text Books:

1. "*Basic Electrical Engineering*", D. P. Kothari and I. J. Nagrath, Tata McGraw Hill,2010.
2. "*Basic Electrical Engineering*", D. C. Kulshreshtha, McGraw Hill, 2009.

References:

1. "*Fundamentals of Electrical Engineering*", L. S. Bobrow, Oxford University Press,2011.
2. "*Electrical and Electronics Technology*", E. Hughes, Pearson, 2010.
3. "*Electrical Engineering Fundamentals*", V. D. Toro, Prentice Hall India, 1989.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18CS0501) PROGRAMMING FOR PROBLEM SOLVING

I B. Tech. – II Sem.(E.C.E)

L	T	C
3	0	3

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 C-PROGRAMMING: Description of Computer Hardware &Software.

Introduction to C:overview of C, executing a 'c' program, c-character set, constants, variables, data types, declaration of variables, assigning values to variables, managing input & output operations, operators and expressions, basics of algorithm and flow chart

UNIT II

DECISION&LOOPCONTROL STATEMENTS: Introduction, If Statement, If-else Statement, Nested- If-else Statement, Else if Ladder, Switch case – break – continue – go to Statement ,for loop, nested for loop, while loop, do-while, do-while statement with while loop

UNIT III

ARRAYS: Introduction, one-dimensional (1D)-Arrays, declaration and initialization of one-dimensional (1D)-Arrays, Two- dimensional (2D)-Arrays, initialization of Two-dimensional(2D)-Arrays, Multi-dimensional Arrays

FUNCTIONS: Introduction, need for user-defined functions, a multi function program, elements of user-defined functions, definition of functions, return values and types, category of functions, recursion, scope and life time of variables, preprocessor commands:#define, #include, multi file programs

UNIT IV

POINTERS: Introduction, understanding pointers, accessing address of a variable, declaring and initialization of pointer variables, accessing variable through pointers, chain of pointers, pointer expressions, pointer increment and scale factor, pointers and arrays, passing arrays to functions, array of pointers, pointers as function arguments, functions returning pointers.

STRINGS: Introduction, declaring and initializing string variables, reading and writing strings, arithmetic operations on characters, putting strings together, comparison of two strings, string handling functions, table of strings(array of strings)

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 within structures, structures within structures, structures and functions, unions, 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.

TEXT BOOKS:

1. *C and Data Structures* – Ashok Kamthane Pearson education
2. *Programming in C and Data Structures* – E Balagurusamy – Mc GrawHill.

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)

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18CE0101) ENGINEERING MECHANICS

I B. Tech -II Sem. (E.C.E.)	**L**	**T**	**C**
	2	**1**	**3**

Course Objectives:

- *To learn about forces and force systems and their applications.*
- *To learn about friction and to use the concept of Friction.*
- *To learn how to find centroid of different objects using Mathematical formula.*
- *To learn how to find Moments of Inertia of different objects using Mathematical formula.*

Course Outcomes:

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

- *Construct free body diagrams and develop appropriate equilibrium equations.*
- *Understand the concepts of friction and to apply in real life problems.*
- *Determine the centroid for composite sections.*
- *Determine the Moment of Inertia for composite sections.*

UNIT-I

FORCES & FORCE SYSTEMS: Fundamental Principles – Resolution and Composition of Forces and Equilibrium of Particles – Lami's Theorem - Principle of Transmissibility – Principles of Continuum - Types of Force Systems – Resultant of Coplanar, Concurrent and Non-Concurrent Force Systems -Varignon's Theorem - Equilibrium of Coplanar Force Systems – Types of Beams and Supports – Support Reactions.

UNIT-II

FRICTION: Types of Friction– Laws of Friction–Limiting Friction–Cone of Limiting Friction - Ladder Friction - Wedge, Screw jack and differential Screw Jack

UNIT-III

CENTROID: Centroids of Simple Figures (From Basic Principles) – Centroids of Composite Figures

CENTRE OF GRAVITY: Centre of Gravity of Simple Body -Centre of Gravity of Composite Bodies- Pappus Theorem

UNIT-IV

MOMENT OF INERTIA: Definition – Parallel Axis Theorem and Perpendicular Axis Theorem – Polar Moment of Inertia – Radius of Gyration – Moment of Inertia of Basic Shapes - Composite Sections - Simple Solids.

UNIT-V

ANALYSIS OF PERFECT TRUSSES: Types of Trusses – Perfect, Deficient and Redundant Trusses - Cantilever Trusses and Simply Supported Trusses – Analysis of Trusses using Method of Joints and Methods of Sections.

Text Books:

1. *A Textbook of Engineering Mechanics*,3rd Edition, Bhavikatti S S , New Age International, 2016.
2. *Engineering Mechanics*, Dr. R. K. Bansal, 4th Edition, Laxmi Publications, 2011.

References:

1. *Engineering Mechanics*, D.S. Kumar, 3rd Edition, S.K. KATARIA & SONS
2. *Singer's Engineering Mechanics: Statics and Dynamics*, 3rd Edition, K. Vijaya Kumar Reddy, J. Suresh Kumar, B.S. Publications, 2011.
3. *Engineering Mechanics: Statics*, 6th Edition, J L Meriam, L G Kraige, Wiley India Pvt. Ltd, 2001.
4. *Engineering Mechanics: Dynamics*, 6th Edition, J L Meriam, L G Kraige, Wiley India Pvt. Ltd, 2010.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS052) PHYSICS LAB

(Common to All Branches)

I B. Tech -II Sem. (E.C.E.) **P** **C**

3 **1.5**

Course Description:

Physics practical course is meant for making the students to gain practical knowledge to correlate with the theoretical studies. It covers experiments on principle of Mechanics and Optics, measurement of magnetic field and studying resonance using LCR circuit.

Objectives:

- To explore the application of Interference and Diffraction by doing concerned experiments.
- Elucidate the concepts of Physics through involvement in the experiment by applying theoretical knowledge.
- To understand the concept of energy gap, B-H curve and resonance phenomena in LCR circuits.
- Develop an ability to apply the knowledge of physics experiments in the later studies.

Suggested list of experiments from the following: (Perform any EIGHT experiments from the following)

1. Determination of wavelengths of various colors of Mercury spectrum using Diffraction Grating – Normal Incidence method.
2. Determination of Dispersive power of prism.
3. Rigidity Modulus – Torsional Pendulum
4. Study of Resonance effect in Series and Parallel LCR circuit.
5. Determination of thickness of thin object by wedge method.
6. Determination of radius of curvature of Plano convex lens – Newton's Rings.
7. Determination of wavelength of a given laser source by using diffraction grating.
8. Determination of particle size using laser source.
9. Determination of energy gap of a semiconductor using p – n junction diode.
10. B- H curve.
11. Magnetic field along the axis of current carrying coil – Stewart & Gee's Method.
12. Determination of frequency of tuning fork - Melde's Apparatus.
13. Determination of Spring constant – Coupled Oscillator.
14. Study of Characteristics of Solar Cell.
15. Determination of Numerical Aperture of an Optical fiber.

Reference books:

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

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18CS0503) PROGRAMMING FOR PROBLEM SOLVING LAB

I B. Tech. – II Sem.(E.C.E.) **P** **C**
3 **1.5**

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.

Experiments List:
1. a) Acquainting students to "c" programming environment and DOS commands
   b) Calculate sum of three numbers using c-program
2. a) Swap(exchange) values of two integer variables using c-program
   b) Read an integer, a character and a float values through keyboard and display
   c) Check operators precedence and associativity using c-program
   d) Write a c-program using all basic data types of c language
3. a) Read 3 integer values through keyboard and display largest among them
   b) Read marks of 5 subjects obtained by a student through keyboard and display "fail" or "pass" message on console
   c) Using switch() statement implement arithmetic operations
4. a) Check whether entered number is prime number
   b) Display factorial of entered number
   c) Display all multiples of an entered number upto given value(n)
5. a) Generate fibonacci series upto entered number(n)
   b) Find out sum of the digits of a number
6. a) Find the binary equivalent of entered decimal number
   b) Generation multiplication table of entered number(n)
7. a) Calculate sum of two integer matrices
   b) Calculate product of two integer matrices
8. a) Create your header file by including 2 user(your) defined functions and include them in a c-program student
   b) Find out factorial of a number using recursive function
   c) Find square of an entered number using "call by address(reference)" technique
   d) A program that tells us purpose of few predefined functions in "math.h" header file
9. a) CFheck whether entered string is palindrome

b) Write a program to sort the entered set of strings using structure concept

10. a) Count number of vowels, consonants, digits, white spaces and special characters in entered string(a line of text)
    b) Swap (exchange) values of two integer variables using pointers
11. a) For 3 students with 3 subjects, calculate total marks and grade obtained by each
    b) Read data from a file(text) and display it on the monitor
12. a) Copy contents of one file(text) to other created file
    b) Merge contents of two files(text) and store it in another created file

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

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0817) ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE

I B. Tech. – II Sem.(E.C.E.)

L	T	C
3	0	0

Course objective

The course aims at imparting basic principles of thought process, reasoning and inference. Sustainability is at the core of Indian Traditional knowledge Systems connecting society and nature. Holistic life style of yogic science and wisdom capsules in Sanskrit literature are also important in modern society with rapid technological advancements and societal disruptions. The course focuses on introduction to Indian Knowledge Systems, Indian perspective of modern scientific world-view, and basic principles of Yoga and holistic health care system.

Unit-1

- Basic structure of Indian Knowledge System: Astadash Vidya- 4 ved
- 4 Upaved (Ayurved, Dhanurved, Gandharva Ved & Sthapthya Adi.,)

Unit-2

- 6 Vedanga (Shisha, Kalppa, Nirukha, VYkaran, Jyothish & Chand)
- 4 Upanga (Dharma Shastra, Meemamsa, Purana & Tharka Shastra)

Unit-3

- Modern Science and Indian Knowledge System
- Yoga and Holistic Health care
- Case studies

Unit-4

- Philosophical Tradition (Sarvadarshan) Nyaya, Vyshepec,Sankhya, Yog, Meemamsa, Vedantha, Chavanka, Jain & Boudh
- Indian Linguistic Tradition –(Phonology, morphology, syntax and semantics)

Unit-5

- Indian Artistic Tradition - Chitra kala, Moorthi kala, Vasthu kala , Sthapthya, Sangeetha, Nruthya Yevam Sahithya
- Case studies

Text Books:

1. V. Sivaramakrishnan (Ed.), *Cultural Heritage of India-course material*, Bharatiya Vidya Bhavan, Mumbai. 5th Edition, 2014
2. Swami Jitatmanand, *Modern Physics and Vedant*, Bharatiya Vidya Bhavan
3. Swami Jitatmanand, *Holistic Science and Vedant*, Bharatiya Vidya Bhavan
4. Fritzof Capra, *Tao of Physics*
5. Fritzof Capra, *The Wave of life*

References:

1. VN Jha (Eng. Trans.), *Tarkasangraha of Annam Bhatta*, International Chinmay Foundation, Velliarnad, Arnakulam
2. *Yoga Sutra of Patanjali*, Ramakrishna Mission, Kolkata GN Jha (Eng. Trans.), Ed. RN Jha, *Yoga-darshanam with Vyasa Bhashya*, Vidyanidhi Prakashan, Delhi 2016
3. RN Jha, *Science of Consciousness Psychotherapyand Yoga Practices*, Vidyanidh Prakashan, Delhi 2016
4. P B Sharma (English translation), *Shodashang Hridayan*
5. V. Sivaramakrishnan (Ed.), *Cultural Heritage of India-course material*, Bharatiya Vidya Bhavan, Mumbai. 5th Edition, 2014
6. S.C. Chaterjee & D.M. Datta, *An Introduction to Indian Philosophy*, University of Calcutta, 1984
7. K.S. Subrahmanialyer, *Vakyapadiya of Bhartrihari, (Brahma Kanda)*, Deccan College Pune 1965
8. *Panini Shiksha,* MotilalBanarasidas
9. V.N. Jha, *Language, Thought and Reality,* Vasudevasharan AGRAWAL Kala yevam Samskruthi, Shithya Bhavan Elahabad, 1952
10. Pramod Chandra, *India Arts*, Howard Univ. Press, 1983
11. Krishna Chaitanya, *Arts of India*, Abhinav Publications, 1987
12. R. Nagaswamy, *Foundations of Indian Art*, Tamil Arts Academy, 2002

Pedagogy: Problem based learning, group discussions, collaborative mini projects.
Outcome: Ability to understand, connect up and explain basics of Indian traditional Knowledge in modern scientific perspective.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0834) MATHEMATICS-III

(Only For ECE)

II B. Tech -I Sem. (E.C.E.)	**L**	**T**	**C**
	3	**1**	**4**

Course Objectives:

The objective of this course is to familiarize the prospective engineers with techniques in Numerical Methods, Transform Calculus & Partial Differential Equations. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines. More precisely, the objectives are:

- To introduce the tools of differentiation and integration of functions of numerical methods that is used in various techniques dealing engineering problems.
- To develop the essential tool of Partial Differential Equations in a comprehensive manner.
- To acquaint the student with mathematical tools needed in evaluating Transform Calculus and their usage.

Course Outcomes:

The objective of this course is to familiarize the prospective engineers with techniques in Numerical Methods, Transform Calculus & Partial Differential Equations. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.

UNIT- I

Numerical Method-I: Solution of polynomial and transcendental equations: Bisection method, Newton-Raphson method and Regula-Falsi method, Finite differences, Interpolation using Newton's forward and backward difference formulae.

Numerical integration: Trapezoidal rule and Simpson's 1/3rd and 3/8rules.

UNIT- II

Numerical Method-II:Ordinary differential equations: Taylor's series, Euler and Runge-Kutta method of fourth order for solving first and second order equations.

Partial differential equations: Finite difference solution two dimensional Laplace equation.

UNIT- III

Transforms Calculus-I: Laplace Transform, Properties of Laplace Transform, Laplace transform of periodic functions. Finding inverse Laplace transform by different methods, Convolution theorem. Evaluation of integrals by Laplace transform,Solving ODEs by Laplace Transform method.

UNIT-IV

Transforms Calculus-II: Fourier transforms: Fourier sine and cosine transform, properties, inverse Fourier transforms, finite Fourier transforms.

UNIT-V

Partial Differential Equations: First order partial differential equations, solutions of first order linear and non-linear PDEs, Solution to homogenous and non-homogenous linear partial differential equations second and higher order by complimentary function and particular integral method, Solution of one dimensional equation, Heat equation.

Text Books:

1. *Higher Engineering Mathematics*, B.S.Grewal, Khanna publishers.
2. Engineering *Mathematics I&II* by T.K.V. Iyengar, S.Chand publications.

Reference Books:

1. *Engineering mathematics* E.Rukmangadachari & E.Keshava Reddy, volume-I&II, Pearson Publishers
2. *Engineering Mathematics* Ramana B.V., Higher, Tata McGraw Hill New Delhi,11th Reprint, 2010.
3. *Engineering Mathematics-I & II*, T.K.V.Iyengar S.Chand Publications.
4. *A text book of Engineering Mathematics* N.P. Bali and Manish Goyal, , Laxmi Publications, Reprint, 2008.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0401) ELECTRONIC DEVICES

II B. Tech. – I Sem. (E.C.E)

L	T	C
3	0	3

Course Objectives:

The objectives of this course is to

- Give understanding on the characteristics of the P-N junction diode, Special purpose devices, Applications of diodes in Electronic circuits.
- Familiarize students with working and characteristics of BJT, FET and MOSFET and to design Biasing circuits and single stage amplifier circuits using low frequency model.

Course Outcomes:

At the end of the Course, the students will be able to:

- Demonstrate the knowledge in Electronic Devices, their Characteristics and Applications.
- Analyze the Diode circuits, Transistor & FET biasing circuits of BJT and FET.
- Design of Diode circuits and Transistor Amplifier circuits using BJT and FET.

UNIT I

PN JUNCTION DIODE: Theory of PN Junction Diode, PN Junction diode - Zero Bias, Forward and Reverse Bias, V-I Characteristics; Energy Band structure of Open circuited PN Junction, Quantitative Theory of PN Diode , Diode Resistances, Diode Capacitances, Ideal Vs. Practical diode, Effect of Temperature on V-I Characteristics, Breakdown in P-N Junction Diodes; Applications, Junction Diode Switching Characteristics, Diode Clippers and Clampers.

UNIT II

RECTIFIERS: Definition, Types: Half-wave Rectifier and Full-wave Rectifier (Qualitative and Quantitative analysis), Inductor Filter, Capacitor Filter, L-section Filter, CLC or π - section Filter, Comparison of Filters in terms of Ripple factors.

SPECIAL PURPOSE DEVICES: Zener Diode- Working, V-I characteristics, Zener Diode as Voltage Regulator; Varactor Diode, Tunnel Diode, Photo Diode, Solar Cell, LED.

UNIT III

BIPOLAR JUNCTION TRANSISTOR: Construction, Working, Transistor Configurations: CE, CB and CC, Characteristics of Transistor in CE, CB and CC configurations, Breakdown in Transistors.

TRANSISTOR BIASING: Need for biasing, Operating point, DC and AC Load line analysis, Biasing methods- Fixed bias, Collector to Base bias, Self-bias, Stability factors, (S, S', S''), Bias compensation, Thermal runaway, Thermal stability and Heat Sink.

UNIT IV

SMALL SIGNAL LOW FREQUENCY TRANSISTOR AMPLIFIER ANALYSIS: Frequency Response of Amplifier, Transistor hybrid model, conversion of h-parameters, Generalized analysis of Transistor amplifier using h-parameter model, Analysis of CB, CE and CC amplifiers using Exact and Approximate h-parameter model, Analysis of CE Amplifier with Emitter resistance, Design of Single Stage RC Coupled Amplifier.

UNIT V

FIELD EFFECT TRANSISTOR: Classification, JFET- Construction, Working and Characteristics of N-Channel JFET, JFET parameters; MOSFET- N-channel Enhancement and Depletion MOSFETs: Construction, Working and Characteristics; Comparison of BJT and FET; FET Biasing methods; Small Signal Model for FET, Analysis of CS and CD Amplifiers at Low frequencies.

IC FABRICATION PROCESS: – Manufacturing Process of Monolithic ICs, CMOS Fabrication Process.

Text Books:

1. *Electronic Devices and Circuits*– S.Salivahanan, N.Suresh Kumar, Third Edition, McGraw Hill Education (India) Private Limited, 2012.
2. *Electronic Devices and Circuits*– J. Millman, C. Halkias, Tata Mc-Graw Hill, 4thEdition, 2010.

References:

1. *Integrated Electronics*–Jacob Millman, C. Halkies, C.D.Parikh, Tata Mc-Graw Hill, 2009.
2. *Micro Electronic Circuits*–Sedra and Smith, Fourth Edition, Oxford University Press, 2002.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0402) DIGITAL SYSTEM DESIGN

II B. Tech. – I Sem. (E.C.E)

L	T	C
3	0	3

Course Objectives:

The Objective of this course is to

- Familiarize the student with fundamental principles of digital design.
- Acquire the skills to manipulate and examine Boolean algebraic expressions, logical operations, Boolean functions and their simplifications.
- Acquaint with classical hardware design for both combinational and sequential logic circuits.
- Acquaint with HDL & EDA Tools for Digital System Design.

Course Outcomes:

At the end of the Course, the students will demonstrate the ability to

- Define different Number system and perform Number base conversions.
- Design and analyze Combinational Logic Circuits.
- Design and analyze modular Combinational Circuits with MUX / DEMUX, Decoder / Encoder.
- Design and analyze synchronous sequential logic circuits.
- Use HDL & EDA tools for digital logic design and simulation.

UNIT I

BINARY SYSTEMS: Binary Numbers, Octal and Hexadecimal Numbers, Number Base Conversions, Complements, Signed Binary Numbers, Binary Codes.

LOGIC SIMPLIFICATION: Review of Boolean algebra and DeMorgan's Theorem, SOP & POS forms, Canonical forms.

UNIT II

GATE – LEVEL MINIMIZATION AND COMBINATIONAL LOGIC: Karnaugh maps up to 5 variables, Tabular Minimization method, Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers, De-Multiplexers.

UNIT III

SEQUENTIAL LOGIC DESIGN: Building blocks like S-R, D FF, T FF, JK and Master-Slave JK FF, Edge triggered FF, Ripple and Synchronous counters, Shift registers, Pseudo Random Binary Sequence generator, Clock generation.

UNIT IV

LOGIC FAMILIES AND SEMICONDUCTOR MEMORIES: TTL NAND gate, Specifications, Noise margin, Propagation delay, fan-in, fan-out, Tri-state TTL, ECL, CMOS families and their interfacing, Memory elements, Concept of Programmable logic devices PAL,PLA Logic implementation using Programmable Devices.

UNIT V

DESIGN ENTRY: Schematic, FSM & HDL, Different modeling styles in VHDL, Data types and objects, Dataflow, Behavioral and Structural Modeling, Synthesis and Simulation VHDL constructs and codes for combinational and sequential circuits.

TEXT BOOKS:

1. *Switching & Finite Automata theory* – Zvi Kohavi, TMH, 2nd Edition.
2. *Digital Design* – Morris Mano, PHI, 3rd Edition, 2006.
3. *Modern digital Electronics*-– R.P. Jain, Tata McGraw Hill, 4th edition, 2009
4. *VHDL*– Douglas Perry, Tata McGraw Hill, 4th edition, 2002.
5. *Digital Electronics*– An introduction to theory and practice", W.H. Gothmann, PHI, 2nd edition, 2006.
6. *Digital Circuits and Systems*– D.V. Hall, Tata McGraw Hill, 1989
7. *Digital System Design using VHDL*– Charles Roth, Tata McGraw Hill 2nd edition 2012.

REFERENCES:

1. *An Engineering Approach to Digital Design* – Fletcher, PHI.
2. *Fundamentals of Logic Design*– Charles H. Roth, 5th Edition, 2004, Thomson Publications.
3. *Digital Logic Applications and Design* – John M. Yarbrough, 2006, Thomson Publication

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0403) SIGNALS & SYSTEMS

II B. Tech. – I Semester (E.C.E)	**L**	**T**	**C**
	3	**0**	**3**

Course Objectives:
The Objective of this course is to
- Study about signals and systems.
- Do the analysis of signals & systems (continuous and discrete) using time domain & frequency domain methods.
- Understand the stability of systems through the concept of ROC.
- Know various transform techniques in the analysis of signals and systems.

Course Outcomes:
At the end of this course students will demonstrate the ability to
- Analyze different types of signals.
- Represent continuous and discrete systems in time and frequency domain using different transforms.
- Investigate the system stability.
- Sampling and reconstruction of a signal.

UNIT I
INTRODUCTION TO SIGNALS AND SYSTEMS: Classification of signals - Energy and Power signals, Continuous and Discrete time signals, Continuous and Discrete amplitude signals, Periodic and Aperiodic, Deterministic and Random, Complex exponential and Sinusoidal signals, Elementary Signals, Operations on signals, Systems: Definition and Classification, Illustrative examples.

UNIT II
FOURIER SERIES: Representation of Fourier series, Properties of Fourier series, Dirichlet‘s conditions, Trignometric Fourier Series and Exponential Fourier series, Discrete Time Fourier Series-properties, Illustrative examples.
FOURIER TRANSFORM: Deriving Fourier Transform from Fourier Series, Fourier Transform of standard signals, Magnitude and Phase response, Properties of Fourier Transform, Fourier Transform of Periodic signals, Discrete Time Fourier Transform-properties, Illustrative examples.

UNIT III
SIGNAL TRANSMISSION THROUGH LINEAR SYSTEMS: Linear system, Impulse response, Step response, Response of a Linear system, Linear Time-Invariant (LTI) system, Linear Time Variant (LTV) system, Linear Shift-Invariant (LSI) systems, LTI System properties, Characterization of Causality and Stability of linear Shift-Invariant Systems, Transfer function of a LTI system, Filter characteristics of Linear systems, Relation between Continuous and Discrete time systems.

SAMPLING: The Sampling Theorem, Spectra of sampled signals, Impulse sampling, Reconstruction of signal from its samples-Ideal reconstruction filter, Aliasing effect.

UNIT IV

CONVOLUTION AND CORRELATION OF SIGNALS: Concept of Convolution in Time domain and Frequency domain, Graphical representation of Convolution, Convolution property of Fourier Transform, Cross correlation and Auto correlation of functions, Properties of correlation function, Energy Density Spectrum, Parseval's theorem, Power Density Spectrum, Detection of Periodic signals in the presence of noise by correlation, illustrative examples.

UNIT V

LAPLACE TRANSFORM: Laplace transform (LT), Region of convergence, Constraints on ROC for various classes of signals, poles and zeros of system, Laplace domain analysis, solution to differential equations, Properties of LT, relation between LT and FT of a signal, illustrative examples.

Z–TRANSFORM: The z-Transform for discrete time systems, Distinction between Laplace, Fourier and z-transforms, Region of convergence in z-transform, constraints on ROC for various classes of signals, Inverse z-transform, properties of z-transforms, illustrative examples.

TEXT BOOKS:

1. *Signals and Systems*– A.V. Oppenheim, A.S. Willsky and S.H. Nawab, PHI, 2nd Edition.
2. *Signals, Systems & Communications*– B.P. Lathi, 2009, BS Publications.

REFERENCES:

1. *Signals and Systems*– A. Anand Kumar, Phi
2. *Signals and Systems Analysis using Transform methods and MATLAB*–M. J.Roberts, TMH, 2003.
3. *Linear Systems and Signals* – B. P. Lathi, Second Edition, Oxford University press, 2008.
4. *Fundamentals of Signals and Systems*– Michel J. Robert, MGH International Edition, 2008.
5. *Signals and Systems*– J. Nagrath, S. N. Sharan, R. Ranjan, S. Kumar, TMH

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EE0242) NETWORK THEORY

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

L	P	C
3	0	3

Course Objectives:

- To understand the nature of different circuit elements, fundamental laws and network Theorems.
- To analyze transients in Electrical systems.
- To evaluate Network parameters of given Electrical network.
- To understand about phasor concepts of single phase and Magnetic circuits.
- To understand the concepts of Resonance and fourier transforms.

Course Outcomes:

At the end of this course students will demonstrate the ability to

- Understand basics electrical circuits with nodal and mesh analysis.
- Determine the transient response of R-L, R-C, R-L-C circuits for d.c and a.c excitations.
- Apply Fourier transforms to electrical circuits excited by non-sinusoidal sources.
- Design different types of filters.

UNIT-I

CIRCUIT ANALYSIS TECHNIQUES: Node and Mesh Analysis, super node and super mesh for DC excitation, Loop and Nodal Methods of Analysis of Networks with Dependent & Independent Voltage and Current Sources – Duality & Dual Networks source transformation. Network theorems: reciprocity, Maximum power Transfer, compensation and Tallegen's, millman's theorem as applied to DC and AC circuits.

UNIT- II

RESONANCE AND FILTERS: Resonance: Series, Parallel resonance, Concept of Bandwidth and Q Factor.

Filters: Introduction, the Neper & decibel, The constant – k low pass filter, the constant – k high pass filter, band Pass Filters, band reject filters - illustrated problems.

UNIT- III

TRANSIENT ANALYSIS: DC Transient Analysis: Transient Response of R-L, R-C, R-L-C Series Circuits for DC Excitation- Initial Conditions-Solution Method Using Differential Equation and Laplace Transforms, Response of R-L & R-C Networks to Pulse Excitation.

AC TRANSIENT ANALYSIS: Transient Response of R-L, R-C, R-L-C Series Circuits for Sinusoidal Excitations-Initial Conditions-Solution Method Using Differential Equations and Laplace Transforms.

UNIT- IV

TWO PORT NETWORKS: Two Port Network Parameters: Impedance, Admittance, Transmission and Hybrid Parameters and their Relations. Concept of Transformed Network, Two Port Network Parameters Using Transformed Variables.

UNIT- V

FOURIER TRANSFORMS: Trigonometric and exponential Fourier series, Line spectra and phase spectra, symmetry of waveform, steady state response of a network to non-sinusoidal periodic inputs, Fourier transform and properties of the Fourier transform.

Text Books:

1. *Network analysis* Van, Valkenburg.; ; Prentice hall of India, 2000.
2. *Circuits and Networks* Sudhakar, A., Shyammohan, S. PTata McGraw-Hill New Delhi, 1994.

References:

1. *Engineering Circuit Analysis* A William Hayt, 8th Edition, McGraw-Hill Education.
2. *Electric circuit analysis, by* C.L.Wadhwa, new age international.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0404) ELECTRONIC DEVICES LAB

II B. Tech -I Sem. (E.C.E.) **P** **C**

3 **1.5**

Course Objectives:

The objectives of this course is to

- Make the student understand the working of various Semiconductor devices and plot their characteristics.
- Obtain the frequency response characteristics of BJT and FET amplifiers.

Course Outcomes:

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

- Know various semiconductor devices and their use in Real time applications.
- Find the Frequency response characteristics of BJT and FET amplifiers and determine Bandwidth.

Electronic workshop practice (for 2 Lab sessions)

1. Identification, Specifications and Testing of passive & active components
2. Study the working of the electronic equipment used in the lab.

List of Experiments

(Minimum of **TEN** experiments to be completed)

CYCLE-I

1. Forward and Reverse bias characteristics of P-N Junction diode
2. Zener diode characteristics
3. Diode clippers
4. Diode clampers
5. Half Wave Rectifier with and without filter
6. Full Wave Rectifier with and without filter

CYCLE –II

7. Input and Output characteristics of Transistor in CB Configuration
8. Input and Output characteristics of Transistor in CE Configuration
9. Drain and Transfer Characteristics of n-channel JFET
10. Frequency response of CE Amplifier
11. Frequency response of CC Amplifier
12. Frequency response of Common Source FET Amplifier

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0405) DIGITAL SYSTEM DESIGN LAB

II B. Tech. – I Sem. (E.C.E)

P	C
2	1

Course Objectives:

The Objective of this course is to

- Get familiar with basic Logic gates
- Acquaint with classical hardware design for both combinational and sequential logic circuits
- Acquaint with HDL & EDA Tools for Digital System Design

Course Outcomes:

At the end of the Course, the students will demonstrate the ability to

- Design and analyze Combinational Logic Circuits
- Design and analyze modular Combinational Circuits with MUX / DEMUX, Decoder / Encoder
- Design and analyze synchronous sequential logic circuits
- Use HDL & EDA tools for digital logic design and simulation

List of Experiments

CYCLE-1

1. Verify the truth tables of AND, OR, NOT, NAND, NOR Gates.
2. Design & Verify the truth tables of Half Adder & Full Adder using logic gates.
3. Design & Verify the truth tables of 4- bit binary adder / subtractor using logic gates.
4. Design & Verify the truth tables of Multiplexer and De-Multiplexer.
5. Design & Verify the truth tables of Encoder and Decoder using logic gates.
6. Design & Verify Magnitude comparator.

CYCLE-II

7. Design of RS & JK FF using NAND gates.
8. Design & implement of Shift Register.
9. Design & implement of Synchronous counters.
10. Simulation of (Exp1 to 6) combinational circuits using VHDL
11. Simulation of (Exp 6,7,8) Sequential circuits using VHDL

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0406) SIGNAL AND SYSTEMS SIMULATION LAB

II B. Tech -I Sem. (E.C.E.)	**P**	**C**
	3	**1.5**

List of Experiments:

(Minimum of Twelve experiments to be conducted)

CYCLE-I

1. Basic operations on matrices
2. Generation of various signals and sequences
3. Operations on Signals and Sequences
4. Finding the Even and Odd parts of signal and sequence and real and imaginary parts of signal
5. Convolution of Sequences
6. Autocorrelation and Cross correlation of signals
7. Verification of Linearity and Time Variant and Invariant properties of a given discrete system

CYCLE-II

8. Computation of Unit Sample, Unit Step and Sinusoidal Responses of the given LTI System
9. Gibbs Phenomenon
10. Finding the Fourier Transform of a given signal
11. Waveform synthesis using Laplace Transform
12. Generation of Gaussian Noise
13. Sampling Theorem verification
14. Removal of Noise by Auto Correlation / Cross correlation in a given signal corrupted by noise

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0816) INDIAN CONSTITUTION

II B. Tech -I Sem. (E.C.E.)	**L**	**P**	**C**
	3	**0**	**0**

Course Objectives:

Students will be able to:

1. Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
2. To address the growth of Indian opinion regarding modern Indian intellectuals 'constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
3. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

Unit-1

- Meaning of the Constitution Law

Unit-2

- Historical Perspective of the Constitution of India
- Salient features and characteristics of the Constitution of India

Unit-3

- Scheme of the fundamental rights
- The scheme of the Fundamental Duties and its legal status
- The Directive Principles of State Policy – Its importance and implementation
- Federal structure and distribution of legislative and financial powers between the Union and the States

Unit-4

- Parliamentary Form of Government in India – The constitution powers and status of the President of India.
- Amendment of the Constitutional Powers and Procedure.
- The historical perspectives of the constitutional amendments in India.
- Emergency Provisions : National Emergency, President Rule, Financial Emergency

Unit-5

- Local Self Government – Constitutional Scheme in India.
- Scheme of the Fundamental Right to Equality.
- Scheme of the Fundamental Right to certain Freedom under Article 19
- Scope of the Right to Life and Personal Liberty under Article 21

Text Books:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015

Suggested reading

1. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
2. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0407) ANALOG CIRCUITS

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

L	T	C
3	0	3

Course Objectives:

- To familiarize the student with the analysis of Small signal Amplifiers at High Frequencies, Multistage amplifiers with compound connections, Feedback amplifiers, Oscillators, Power amplifiers and Tuned amplifiers.
- To introduce the basic building blocks of linear integrated circuits.

Course Outcomes:

Upon completion of this course, student will be able to:

- Analyze and design BJT single stage and multi stage amplifiers, feedback amplifiers, oscillators, power amplifiers and tuned amplifiers.
- Understand the basic building blocks of linear integrated circuits.

UNIT I

SMALL SIGNAL HIGH FREQUENCY TRANSISTOR AMPLIFIER ANALYSIS AND MULTISTAGE AMPLIFIERS

BJT Transistor at high frequencies, Hybrid- π Common Emitter transistor model and its parameters, CE short circuit current gain, Current gain with resistive load, Methods of coupling**,** Cascade transistor amplifier and its analysis, Cascode amplifier, Darlington pair and its analysis, Effect of cascading on Bandwidth.

UNIT II

FEEDBACK AMPLIFIERS: Feedback concept, types of feedback, Amplifier models: Voltage amplifier, current amplifier, trans-conductance amplifier and trans-resistance amplifier, feedback amplifier topologies, characteristics of negative feedback amplifiers, Analysis of feedback amplifiers, Performance comparison of feedback amplifiers.

OSCILLATORS: Principle of operation, Barkhausen Criteria, types of oscillators, Analysis of RC-phase shift and Wien bridge oscillators using BJT, Generalized analysis of LC Oscillators, Hartley and Colpitt's oscillators with BJT, Crystal oscillators, Frequency and amplitude stability of oscillators.

UNIT III

POWER AMPLIFIERS: Types, Class A large signal Amplifiers, Transformer Coupled Audio power amplifier- Efficiency, Class B Amplifiers, Efficiency, Complementary Symmetry push pull amplifier, Crossover Distortion.

TUNED AMPLIFIERS

Introduction, Single Tuned Amplifier, Double Tuned Amplifiers, Effect of Cascading Single tuned amplifiers on Band width, Staggered tuned amplifiers, Stability of tuned amplifiers.

UNIT IV

OPERATIONAL AMPLIFIER: Basic Information of Op-Amp, Inverting and Non inverting , Voltage Follower, CMRR, Operational Amplifier Internal Circuit, Differential Amplifier, Transfer Characteristics, Scale Changer, Summing Amplifier, Subtractor, Instrumentation Amplifier, Sample and Hold Circuit, Differentiator, Integrator, Schmitt Trigger.

UNIT V

OP-AMP APPLICATIONS: Active filters: Low pass, high pass, band pass and band stop, Design guidelines, DAC – Weighted Resistor DAC, R-2R ladder DAC, Inverted R-2R Ladder DAC, ADC – Flash Type ADC, Successive Approximation ADC, Dual Slope ADC, DAC/ADC Specifications.

Text Books:

1. *Electronic Devices and Circuits*– Salivahanan, N.Suresh Kumar, McGraw Hill Education, Third Edition.
2. *Linear Integrated Circuits*– D.Roy Choudhury, Shail B.Jain, New Age International Publishers, Fourth Edition, 2010.

References:

1. *Micro Electronic Circuits*– Sedra A.S. and K.C. Smith, Oxford University Press, 4th Edition.
2. *Electronic Devices and Circuits*– Jacob Millman, Christos C.Halkias, Tata McGraw Hill Edition, 1991.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0408) ANALOG COMMUNICATIONS

II B. Tech. – II Sem. (E.C.E)

L	T	C
3	0	3

Course Objectives:

- To study the fundamental concepts of the analog communication system.
- To analyze various analog modulation and demodulation techniques.
- To know the working of various transmitters and receivers.
- To understand the influence of noise on the performance of analog communication systems, and to acquire the knowledge about information and capacity.

Course Outcomes:

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

- Acquire knowledge on the basic concepts of Analog Communication Systems.
- Analyze the analog modulated and demodulated systems.
- Verify the effect of noise on the performance of communication systems.
- Know the fundamental concepts of information and capacity.

UNIT- I

Introduction: Elements of communication systems, Modulation, Modulation Methods and its need, Frequency mixer, EM Spectrum and its Applications.

Amplitude Modulation & Demodulation: DSB-FC(AM)modulation & its demodulation, Generation of AM signals, sideband and carrier power of AM, Double sideband suppressed carrier (DSB-SC) modulation & its demodulation, Single sideband (SSB) transmission, Time domain representation of SSB signals & their demodulation schemes (with carrier, and suppressed carrier), Generation of SSB signals, Features of Vestigial sideband (VSB)modulation, Comparison of various amplitude modulation techniques, AM Transmitters, Illustrative Problems.

UNIT- II

Angle Modulation & Demodulation: Concept of instantaneous frequency, Generalized concept of angle modulation, Bandwidth of angle modulated waves – Narrow band frequency modulation (NBFM) and Wide band FM (WBFM), Phase modulation, Generation of FM waves – Indirect method, Direct method. Demodulation of FM, Pre-emphasis& De-emphasis filters, Non-linear effects in FM systems, FM Transmitter, Illustrative Problems.

UNIT- III

Noise in Communication Systems: Types of noise, Time domain representation of narrowband noise, filtered white noise, Quadrature representation of narrowband noise, Envelope of narrowband noise plus sine wave, Noise equivalent bandwidth, Effective noise temperature, and Noise figure. Performance analysis (i.e. finding SNR expression) of AM, DSB-SC, SSB-SC, FM, PM in the presence of noise, Illustrative Problems.

UNIT- IV

Analog pulse modulation schemes and Multiplexing Techniques: Pulse amplitude modulation (PAM) & demodulation, synchronization in PAM modulation, Pulse-Time Modulation – Pulse Duration and Pulse Position modulations and demodulation schemes, Multiplexing Techniques.

UNIT- V

Radio Receivers & Information theory: Sensitivity, Selectivity, and Fidelity. Super-heterodyne AM & FM receivers.

Information theory: Introduction, Information content of message, Entropy, mutual information, and channel capacity theorem, Shannon's encoding algorithm.

Text books:

1. *Communication Systems,* Simon Haykin,Wiley-India edition, 2nd edition, 2010.
2. *Communication Systems – An Introduction to Signals & Noise in Electrical Communication*,A. Bruce Carlson, & Paul B. Crilly, MGH, 5th Edition, 2010.

References:

1. Principles of Communication Systems,Herbert Taub& Donald L.Schilling, Tata McGraw-Hill, 3rd Edition, 2009.
2. Principles of Communication-Systems Modulation & *Noise*, R.E. Ziemer& W.H. Tranter, Jaico Publishing House, 2001.
3. *Electronics & Communication System*,George Kennedy and Bernard Davis, TMH, 2004.
4. *Electronic communication systems fundamentals through advanced*,Wayne thomasi 4th edition.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0409) PROBABILITY THEORY AND STOCHASTIC PROCESSES

II B. Tech. – II Sem. (E.C.E)	**L**	**T**	**C**
	3	**1**	**4**

Course Objectives:

- To understand the concepts of a Random Variable and operations that may be performed on a single Random variable.
- To understand the concepts of Multiple Random Variables and operations that may be performed on Multiple Random variables.
- To understand the concepts of Random Process and Temporal & Spectral characteristics of Random Processes.

Course Outcomes:

- A student will able to determine the temporal and spectral characteristics of random signal response of a given linear system.

UNIT I

PROBABILITY: Probability introduced through Sets and Relative Frequency: Experiments and Sample Spaces, Discrete and Continuous Sample Spaces, Events, Probability Definitions and Axioms, Mathematical Model of Experiments, Probability as a Relative Frequency, Joint Probability, Conditional Probability, Total Probability, Baye's Theorem, Independent Events.
THE RANDOM VARIABLE : Definition of a Random Variable, Conditions for a Function to be a Random Variable, Discrete and Continuous, Mixed Random Variable, Distribution and Density functions, Properties, Binomial, Poisson, Uniform, Gaussian, Exponential, Raleigh, Conditional Distribution, Methods of defining Conditioning Event, Conditional Density, Properties.

UNIT II

MULTIPLE RANDOM VARIABLES: Vector Random Variables, Joint Distribution Function, Properties of Joint Distribution, Marginal Distribution Functions, Conditional Distribution and Density – Point Conditioning, Conditional Distribution and Density – Interval conditioning, Statistical Independence, Sum of Two Random Variables, Sum of Several Random Variables, Central Limit Theorem, (Proof not expected). Unequal Distribution, Equal Distributions.
OPERATIONS ON MULTIPLE RANDOM VARIABLES: Expected Value of a Function of Random Variables, Joint Moments about the Origin, Joint Central Moments, Joint Characteristic Functions, Jointly Gaussian Random Variables: Two Random Variables case, N Random Variable case, Properties, Transformations of Multiple Random Variables, Linear Transformations of Gaussian Random Variables.

UNIT III

RANDOM PROCESSES – TEMPORAL CHARACTERISTICS: The Random Process Concept, Classification of Processes, Deterministic and Nondeterministic Processes, Distribution and Density Functions, concept of Stationary and Statistical Independence. First-Order Stationary Processes, Second- Order and Wide-Sense Stationary, (N-Order) and Strict-Sense Stationary, Time Averages and Ergodicity, Mean-Ergodic Processes, Correlation-Ergodic Processes, Autocorrelation Function and Its Properties, Cross-Correlation Function and its Properties, Covariance Functions, Gaussian Random Processes, Poisson Random Process.

UNIT IV

RANDOM PROCESSES – SPECTRAL CHARACTERISTICS: The Power Spectrum: Properties, Relationship between Power Spectrum and Autocorrelation Function, the Cross-Power Density Spectrum, Properties, Relationship between Cross-Power Spectrum and Cross-Correlation Function.

UNIT V

LINEAR SYSTEMS WITH RANDOM INPUTS: Random Signal Response of Linear Systems: System Response – Convolution, Mean and Mean-squared Value of System Response, autocorrelation Function of Response, Cross-Correlation Functions of Input and Output, Spectral Characteristics of System Response: Power Density Spectrum of Response, Cross-Power Density Spectrums of Input and Output, Band pass, Band-Limited and Narrowband Processes, Properties.

Text Books:

1. *Random Variables & Random Signal Principles* Peyton Z. Peebles,"Probability,", TMH, 4th Edition,
2. *Probability, Random Variables and Stochastic Processes,* Athanasios Papoulis and Unnikrishna Pillai, PHI, 4th Edition, 2002.
3. *Probability Theory & Stochastic Processes,* Y.Mallikarjuna Reddy,4th edition.

References:

1. *Communication Systems Analog & Digital* R.P. Singh and S.D. Sapre, TMH, 1995.
2. *Probability and Random Processes with Application to Signal Processing* Henry Stark and John W.Woods, Pearson Education, 3rd Edition.
3. *Probability Methods of Signal and System Analysis* George R. Cooper, Clave D. MC Gillem, Oxford, 3rd Edition, 1999.
4. *Statistical Theory of Communication* S.P. Eugene Xavier, Statistical Theory of Communication, New Age Publications, 2003.
5. *Signals, Systems & Communications* B.P. Lathi, , B.S. Publications, 2003.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0812) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

II B. Tech -II Sem. (E.C.E.)	**L**	**T**	**C**
	3	**0**	**3**

Course Objective:

The objectives of this course are to equip the student with the basic inputs of Managerial Economics and Economic Environment of business and to enrich analytical skills in helping them take sound financial decisions for achieving higher productivity.

Learning Outcome:

The thorough understanding of Managerial Economics and Analysis of Financial statements facilitates the technocrats –cum- entrepreneurs to take up decisions effectively and efficiently in the challenging Business Environment.

UNIT I

INTRODUCTION TO MANAGERIAL ECONOMICS: Managerial Economics - Definition, nature and scope – contemporary importance of Managerial Economics - Demand Analysis: Determinants- Law of Demand - Elasticity of Demand. Significance –Types – measurement of elasticity of demand – Demand forecasting- factors governing demand Forecasting- methods of demand forecasting –Relationship of Managerial Economics with Financial Accounting and Management.

UNIT II

THEORY OF PRODUCTION AND COST ANALYSIS: Production Function – Short-run and long- run production - Isoquants and Iso costs, MRTS, least cost Combination of inputs - Cobb-Douglas production function - laws of returns – Internal and External Economies of scale - **Cost Analysis**: Cost concepts - Break-Even Analysis (BEA) –Managerial Significance and limitations of BEA - Determination of Break Even Point (Simple Problems).

UNIT III

INTRODUCTION TO MARKETS AND NEW ECONOMIC ENVIRONMENT: Market structures: Types of Markets - Perfect and Imperfect Competition - Features, Oligopoly - Monopolistic competition. Price-Output determination - Pricing Methods and Strategies. New Economic Environment- Economic systems – Economic Liberalization – Privatization and Globalization

UNIT IV

CAPITAL AND CAPITAL BUDGETING: Concept of Capital - Over and under capitalization – Remedial measures - Sources of Short term and Long term capital - Estimating Working Capital requirement – Capital budgeting – Features of Capital Budgeting

proposals – Methods and Evaluation of Capital budgeting – Pay Back Method – Accounting Rate of Return (ARR) – Net Present Value (NPV) – Internal Rate Return (IRR) Method (simple problems).

UNIT V

INTRODUCTION TO FINANCIAL ACCOUNTING AND ANALYSIS: Financial Accounting – Concept - emerging need and importance - Double-Entry Book Keeping-Journal - Ledger – Trial Balance - Financial Statements - - Trading Account – Profit & Loss Account –Balance Sheet (with simple adjustments). Financial Analysis – Ratios – Techniques – Liquidity, Leverage, Profitability, and Activity Ratios (simple problems).

Text Books:

1. *Managerial Economics and Financial Analysis* Aryasri, 4/e, TMH, 2009.
2. *Managerial Economics*, Sultan Varshney & Maheswari, Chand, 2009.

Reference Books:

1. *Financial Accounting and Analysis* Premchand Babu, Madan Mohan:, Himalaya, 2009
2. *Economics and Financial Analysis* S.A. Siddiqui and A.S. Siddiqui: Managerial, New Age International, 2009.
3. *Principles of Business Economics* Joseph G. Nellis and David Parker, Pearson, 2/e, New Delhi.
4. *Managerial Economics in a Global Economy* Domnick Salvatore, Cengage, 2009.
5. *Managerial Economics* H.L.Ahuja, S.Chand, 3/e, 2009

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0803) BIOLOGY FOR ENGINEERS

(Common to all Branches)

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

L	T	C
3	0	3

Course Objectives

- Describe how biological observations of 18th Century that lead to major discoveries.
- Convey that classification per se is not what biology is all about but highlight the underlying criteria, such as morphological, biochemical and ecological
- Highlight the concepts of recessiveness and dominance during the passage of genetic material from parent to offspring
- Convey that all forms of life have the same building blocks and yet the manifestations are as diverse as one can imagine

Course Outcomes

- Classify enzymes and distinguish between different mechanisms of enzyme action.
- Identify DNA as a genetic material in the molecular basis of information transfer.
- Analyse biological processes at the reductionistic level
- Apply thermodynamic principles to biological systems.
- Identify and classify microorganisms.

UNIT I

INTRODUCTION & CLASSIFICATIONS OF ORGANISMS: Introduction - classification based on (a) cellularity- Unicellular or multicellular (b) ultrastructure- prokaryotes or eucaryotes. (c) energy and Carbon utilisation -Autotrophs, heterotrophs, lithotropes (d) Ammonia excretion – aminotelic, uricoteliec, ureotelic (e) Habitata- acquatic or terrestrial (e) Molecular taxonomy- three major kingdoms of life. Model organisms - study of different groups - E.coli, S.cerevisiae, D. Melanogaster, C. elegance, A. Thaliana, M. musculus.

UNIT II

GENETICS PURPOSE

Concept of allele. Gene mapping, Gene interaction, Epistasis. Meiosis- Concepts of recessiveness and dominance - Concept of mapping of phenotype to genes - single gene disorders in humans - Complementation in human genetics.

UNIT III

BIOMOLECULES PURPOSE & ENZYMES PURPOSE: Building blocks of Molecules of life & it's types. Introduction & Concepts- Monomer units and polymeric structures,

Sugars, starch, cellulose, Amino acids, proteins, Nucleotides, DNA/RNA, Two carbon units and lipids.

Role of catalysis life in existed on earth Enzymology: Enzyme classification. Mechanism of enzyme action. Enzyme kinetics and kinetic parameters related to Biology. RNA catalysis. Classifications and Procedure for Enzyme catalysed reactions with two examples.

UNIT IV

INFORMATION TRANSFER PURPOSE & MACROMOLECULAR ANALYSIS PURPOSE: Molecular basis of coding and decoding genetic information is universal Molecular basis of information transfer. Genetic material of DNA, Hierarchy of DNA structure- from single stranded to double helix to nucleosomes. Introduction and Explanation of genetic code and degeneracy of genetic code. Gene - complementation and recombination.

Biological processes at the reductionist level Proteins - structure and function. Hierarch in protein structure. Primary secondary, tertiary and quaternary structure. Proteins as enzymes, transporters, receptors and structural elements.

UNIT V

METABOLISM PURPOSE: The principles of energy transactions - in physical and biological world. Thermodynamics as applied to biological systems. Exothermic and endothermic versus endergonic and exergoinc reactions. Concept of Keq and its relation to standard free energy. Spontaneity. ATP as an energy currency- including breakdown of glucose to CO2 + H2O (Glycolysis and Krebs cycle) and synthesis of glucose from CO2 and H2O (Photosynthesis). Energy yielding and energy consuming reactions.

Microbiology -single celled organisms -species and strains. Identification and classification of microorganisms. Microscopy. Ecological aspects of single celled organisms. Sterilization and media compositions. Growth kinetics.

References:

1) Biology: A global approach: Campbell, N. A.; Reece, J. B.; Urry, Lisa; Cain, M, L.; Wasserman, S. A.; Minorsky, P. V.; Jackson, R. B. Pearson Education Ltd

2) Outlines of Biochemistry, Conn, E.E; Stumpf, P.K; Bruening, G; Doi, R.H. John Wiley and Sons

3) Principles of Biochemistry (V Edition), By Nelson, D. L.; and Cox, M. M.W.H. Freeman and Company

4) Molecular Genetics (Second edition), Stent, G. S.; and Calender, R. W.H. Freeman and company, Distributed by Satish Kumar Jain for CBS Publisher

5) Microbiology, Prescott, L.M J.P. Harley and C.A. Klein 1995. 2nd edition Wm, C. Brown

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0410) ANALOG CIRCUITS LAB

II B. Tech -II Sem. (E.C.E.) **P C**
3 1.5

Course Objectives:

- To understand the analysis of single stage and multi stage amplifiers.
- To construct feedback amplifiers, oscillators, power amplifier and Tuned Amplifier.
- To design electronic circuits using Op Amp.

Course Outcomes:

Upon completion of this course, student will be able to:

- Construct and simulate various single stage, multi stage amplifiers, feedback amplifiers, oscillators, power amplifiers and tuned amplifiers.
- Design various electronic circuits using op Amp.

List of Experiments:

(Minimum of Twelve experiments to be conducted)

CYCLE-I

1. A two stage RC coupled amplifier
2. Darlington pair amplifier
3. Voltage series feedback amplifier
4. RC phase shift oscillator using BJT
5. Colpitts oscillator using BJT
6. Class A power amplifier (Transformer less)
7. Single tuned voltage amplifier

CYCLE-II

8. Inverting and non-inverting amplifier using Op-Amp
9. Differential amplifier using Op-Amp
10. Integrator and Differentiator using Op-Amp
11. Active Lowpass filter using Op-Amp
12. Active Highpass filter using Op-Amp
13. Schmitt trigger using Op-Amp
14. DAC – Weighted Resistor & R-2R ladder DAC,

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18EC0411) ANALOG COMMUNICATIONS LAB

II B. Tech. – II Sem. (E.C.E) **P** **C**
3 **1.5**

Course Objectives:
- To experience real time behavior of different analog & digital modulation schemes

Course Outcomes:
After completion of the course the students will be able
- Technically visualize spectra of different analog modulation schemes
- Analyze practical behavior of different elements available in analog communication system such as filters, amplifiers etc.
- Measure characteristics of radio receiver measurements.

List of Experiments:
(All Experiments are to be conducted)

Cycle-I

1. Amplitude modulation and demodulation.
2. Frequency modulation and demodulation.
3. Phase modulation and demodulation.
4. Characteristics of Mixer.
5. Pre-emphasis & de-emphasis

Cycle-II

6. Pulse amplitude modulation & demodulation.
7. Pulse width modulation & demodulation
8. Pulse position modulation & demodulation.
9. Radio receiver measurements – sensitivity selectivity and fidelity.
10. Time division multiplexing

Equipment required for the Laboratory:

1. Regulated Power Supply equipment's 0 – 30 V
2. CROs 0 – 20 M Hz.
3. Function Generators 0 – 3 M Hz
4. Multimeters
5. Required electronic components (active and passive) for the design of experiments.
6. Radio Receiver Demo kits or Trainers.

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

(18HS0804) ENVIRONMENTAL SCIENCES

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

L	P	C
3	0	0

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

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

E-learning resources:

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