VASAVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
Ibrahimbagh, Hyderabad-31
Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

Sponsored
by
VASAVI ACADEMY OF EDUCATION
Hyderabad

SCHEME OF INSTRUCTION AND SYLLABI UNDER CBCS FOR B.E. (EEE) III and IV Semesters With effect from 2020-21 (For the batch admitted in 2019-20) (R-19)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
Phones: +91-40-23146030, 23146031
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With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS):: IBRAHIMBAGH, HYDERABAD – 500 031.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SCHEME OF INSTRUCTION AND EXAMINATION (R-19):: B.E. - EEE : THIRD SEMESTER(2020 - 21)

B.E (EEE) III Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U19HS330EH	Skill Development-I : Communications Skills in English	2	-	-	3	60	40	2
U19BS310MA	Partial Differential Equations and Transform Calculus	3	-	-	3	60	40	3
U19ES310EC	Electronics Engineering - I	3	-	-	3	60	40	3
U19PC310EE	Electrical Network Analysis	2	1	-	3	60	40	3
U19PC320EE	Electromagnetic Field Theory	3	1	-	3	60	40	4
U19OE3XXXX	Open Elective-I	2	-	-	3	60	40	2
U19MC310ME	Introduction to Entrepreneurship	1	-	-	2	40	30	0
PRACTICALS								
U19ES311EC	Electronics Engineering – I Lab	-	-	2	3	50	30	1
U19PC311EE	Electrical Network Analysis Lab	-	-	2	3	50	30	1
	TOTAL	**16**	**02**	**4**		**500**	**330**	-
	GRAND TOTAL	**22**				**830**		**19**
Student should acquire one online course certification equivalent to two credits during III Sem to VII sem.								

Note: 1. Two hours are allocated for Library/Sports/Proctorial Interaction 2. Two hours are allocated for CCA-I
3. Two hours are allocated for ECA-I

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF Humanities and Social Sciences

Skill Development-I: Communications Skills in English

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U19HS330EH
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

Course Overview:

Be it career or relationships, the harsh truth in today's global scene is that the future of any person is affected strongly by his//her communication skill in English. The four major skills of language learning, listening, speaking, reading and writing provide the right key to success.

Course Objective:

The main objective of this finishing school curriculum is to involve content for all the above mentioned four skills in teaching English and to get students proficient in both receptive and productive skills.

Overview of the delivery Methodology:

- Every Session will have activities on all the four skills.
- To personalize the learning a variety of case studies and structured problem solving activities will be given in small groups and the trainers will facilitate peer reviews.
- Integration of continuous grading (for assignment 1 and 2), instant feedback,(peer review sheets) clear goals, rewards (certificates and appreciation kits), have been included this time for positive reinforcement.
- The Writing and Reading exercises will be given in the workbook and will carry marks
- Vocabulary exercises will also be part of every session
- The Lateral entry students will be given a self study plan for language enhancement and will be given extra reading and writing exercises

Unit1 – Fundamentals of Communication

Unit Overview:

The module is an introductory module that covers the **fundamentals of communication**. This module is intended to enable the students to communicate using greetings and small sentences/queries.

Learning Outcome:

The students should be able to:

- Respond to questions
- Engage in informal conversations.
- Speak appropriately in formal situations
- Write formal and informal emails/letters

Competencies:

- Greeting appropriately
- Introducing themselves, a friend
- Reading and summarising the gist of a conversation
- Responding to simple statements and questions both verbally and in writing
- Writing an email with appropriate salutation, subject lines, introduction, and purpose of mail.
- Using appropriate vocabulary for both formal and informal situations
- Stating takeaways from a session or conversations

Sessions:

1. Introduction to Formal and Informal Conversations
2. Informal Conversations
3. Informal Conversations - Writing
4. Formal Conversations
5. Formal Conversations - Writing

Unit 2 - Narrations and Dialogues

Unit Overview:

The Module is intended to develop level of language competence that enables them to narrate and participate in casual dialogues.

Learning Outcome:

The students should be able to

- Narrate a message/story/incident, both verbally and in writing.
- Describe an event/a session/ a movie/ an article/image
- Understand Vocabulary in context

Competencies:

- Framing proper phrases and sentences to describe in context
- Reading Stories and articles and summarising the gist
- Speaking fluently with clarity and discrimination
- Listening for main ideas and reformulating information in his/her own words
- Drawing and write appropriate conclusions post reading a passage.
- Speaking Reading and Writing descriptive sentences and paragraphs
- Using appropriate tenses, adjectives and adverbs in conversations and written tasks

Sessions:

1. Recalling and Paraphrasing
2. Describing Present Events
3. Describing Past Events
4. Describing Future Events
5. Describing Hypothetical events

Unit 3 - Rational Recap

Unit Overview:

The module enables the participants to organize their communication, structure their speaking and writing, explain their thoughts/ideas, and summarize the given information.

Learning Outcome:

The students should be able to:

- Classify content and describe in a coherent form
- Recognize and list the key points in a topic/message/article.
- Compare and contrast using appropriate structure
- Explain cause and effect
- Understand the problem and solution framework
- Use appropriate transitions in their presentations and written assignments

Competencies:

- Organizing the communication based on the context and audience
- Structuring the content based on the type of information.
- Explaining a technical/general topic in detail.
- Writing a detailed explanation/process
- Recapitulating

Sessions:

1. Introduction to Mind maps
2. Classification
3. Sequencing
4. Description and Enumeration

Unit 4: Technical Expositions and Discussions

Unit Overview:

The module enables the students to build strategies for effective interaction and help them in developing decisive awareness and personality maintaining emotional balance.

Learning Outcome:

The students should be able to:

- Participate in technical and forum discussions by providing factual information, possible solutions, and examples.

Competencies:

- Comprehending key points of a topic and note main points including supporting details.

- Construct a logical chain of arguments and decisive points.
- Writing a review about a product by providing reasons, causes, and effects

Sessions:

1. Compare and Contrast
2. Cause and Effect
3. Problem and Solution

Unit 5: Drawing Conclusions

Unit Overview:

This module is intended to provide necessary inputs that enable the students to draw conclusions out of a discussion and provide reports.

Learning Outcome:

Students should be able to:

- Provide logical conclusions to the topics under discussion.
- Prepare, present, and analyze reports.

Competencies:

- Reasoning skills - Coherent and logical thinking
- Reporting and Analyzing skills.
- Analyzing the points discussed.
- Connecting all points without gaps.
- Identifying clinchers.
- Communicating the decisions

Sessions:

1. Reasoning
2. Analyzing
3. Generalization and Prediction

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF MATHEMATICS

Partial Differential Equations and Transform Calculus

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19BS310MA**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. **Study** the Fourier series, conditions for expansion of function and half range series 2. **Formulate** and understand linear and nonlinear partial differential equations. 3. **Study** the applications of Partial Differential equations 4. **Understand** the Definition of Laplace and inverse Laplace Transforms-Shifting Properties and various theorems and how to apply them in solving Differential Equations. 5. **Study** the concept of Fourier and inverse Fourier Transform of a function and various properties.	1. **Expand** any function which is continuous, Discontinuous, even or odd in terms of its Fourier series. 2. **Formulate t**he Partial differential equations by eliminating arbitrary constants and functions and solve linear, non linear Partial differential equations. 3. **Solve the** one dimensional wave(Vibrations of a string), heat equations and two dimensional heat equations. 4. **Evaluate** Laplace transforms and inverse Laplace transforms of functions. Apply Laplace transforms to solve ordinary differential equations arising in engineering problems. **5. Determine** Fourier transform, Fourier sine and cosine transform of a function.

UNIT-I: (14 Hours)

Laplace Transforms: Introduction to Laplace transforms - Inverse Laplace transform - Sufficient Condition for Existence of Laplace Transform –Properties of Laplace Transform- Laplace Transform of

Derivatives - Laplace Transform of Integrals - Multiplication by t^n - Division by t – Evaluation of Integrals by Laplace Transforms- Convolution Theorem - Application of Laplace transforms to Initial value Problems with Constant Coefficients.

UNIT-II: (10 Hours)

Fourier series: Introduction to Fourier series – Conditions for a Fourier expansion – Functions having points of discontinuity – Change of Interval - Fourier series expansions of even and odd functions - Fourier Expansion of Half- range Sine and Cosine series.

UNIT-III: (10 Hours)

Fourier Transforms: Fourier Integral Theorem (without Proof) - Fourier Transforms – Inverse Fourier Transform - Properties of Fourier Transform –Fourier Cosine & Sine Transforms.

UNIT-IV: (10 Hours)

Partial Differential Equations : Formation of first and second order Partial Differential Equations - Solution of First Order Equations – Linear Equation - Lagrange's Equation - Non-linear first order equations – Standard Forms.

UNIT-V: (8 Hours)

Applications of Partial Differential Equations: Method of Separation of Variables - One Dimensional Wave Equation- One Dimensional Heat Equation – Two Dimensional Heat equation Laplace's Equation- (Temperature distribution in long plates).

Learning Resources:

1. **Text Books:**

1. R.K. Jain & S.R.K. lyengar, Advanced Engineering Mathematics, Third Edition, Narosa Publications, 2007.
2. Higher Engineering Mathematics, Dr.B.S Grewal 40th Edition, Khanna Publishers.

2. **Reference Books:**

1. Advanced Engineering Mathematics, Kreyszig E, 8 th Edition, John Wiley & Sons Ltd, 2006.

2. A text book of Engineering Mathematics by N.P.Bali & Manish Goyal, Laxmi Publication.

3. **Online Resources :**

1. **http://tutorial.math.lamar.edu/Classes/DE/DE.aspx**
2. **http://mathworld.wolfram.com/topics**
3. **http://www.nptel.ac.in/course.php**

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING

Electronics Engineering – I

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19ES310EC**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To give understanding on semiconductor materials and characteristics of the p-n junction diode. 2. To understand the operation of BJT, FET, MOSFET and characteristics of special purpose electronic devices. 3. To familiarize students with biasing circuits of BJT, FET, MOSFET.	1. Define and describe the principle of operation of electronic devices like PN junction diode, Zener diode, BJT, FET and MOSFET etc. 2. Analyze and design various rectifier circuits with and without filters for a regulated DC power supply. 3. Illustrate the use of diode in practical applications and gain knowledge on special diodes 4. Analyze the small signal low frequency Bipolar junction Transistor model in exact and approximate model. 5. Analyze the small signal low frequency Field effect transistor amplifiers in different configurations with the help of their equivalent circuits.

UNIT - I : **Semiconductor Diodes and Rectifiers**

P-n junction as a rectifier, V-I characteristics, temperature dependence of V-I characteristics, Breakdown of junctions – Zener and Avalanche, halfwave, fullwave, bridge rectifiers, L,C, π –section filters, Regulation and Ripple characteristics.

UNIT - II : BJT circuits

BJT current components, Structure and I-V characteristics of a BJT, modes of transistor operation, Early effect, BJT input and output

characteristics in CB, CE and CC configuration. BJT as a switch.BJT as an amplifier. BJT biasing techniques thermal runaway, operating point, bias stabilization circuits.

UNIT - III : Small Signal analysis of Transistor Circuits

Small signal low frequency h-parameters model of BJT, h-parameters, analysis of BJT amplifier with exact and approximate models, comparison of CB, CE and CC amplifier configurations, Miller's theorem. RC coupled amplifier.

UNIT - IV : Filed effect transistors

V-I characteristics of JFET, JFET biasing, low frequency small signal model of FETs, MOSFETs: Enhancement and depletion mode MOSFETs, V-I characteristics. MOSFET biasing, MOSFET as a switch. MOSFET as an amplifier: common-source amplifier and common-gate amplifier. small signal equivalent circuits - gain, input and output impedances, trans conductance.

UNIT - V : CRO & Special devices:

Study of CRO block diagram, Elementary treatment on the functioning of tunnel diode, varactor diode, photo diode, light emitting diode, LCD, UJT, SCR, photo transistor.

Learning Resources:

1. Jacob Millman and Christos C. Halkias, Satyabratajit "Electronics Devices and Circuits", McGraw hill, 3rd edition, 2010.
2. Jacob Millman and Christos C. Halkias, Chetan D Parikh, "Integrated Electronics" Mc Graw Hill, 2009.
3. Robert L. Boylestad and Louis Nashelsky, "Electronic Devices and Circuit Theory", PHI, 11th edition 2015.
4. A. S. Sedra and K. C. Smith, "Microelectronic Circuits", Seventh Edition New York, Oxford University Press, 2014.
5. https://nptel.ac.in/courses/108102095/
6. https://nptel.ac.in/courses/117101106/

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
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3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Network Analysis

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):2:1:0	SEE Marks: 60	Course Code: U19PC310EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of Network Analysis is to provide Knowledge on transient and steady state analysis of electrical circuits, Resonance, coupled circuits and two port network parameters. Also provide the Laplace approach to analyse electrical networks.	At the end of this course, students will demonstrate the ability to 1. Understand and Analyse the transient and steady-state response of first order and second order electrical circuits. 2. Understand and Analyse the resonance in electrical circuits 3. Analyse the coupled circuits. 4. Analyse the two port networks. 5. Apply Laplace transforms to analyse the electrical circuits

Unit I:

Solution of First order networks

Introduction, Terminology: Time constant, natural response, forced response; The source free RC circuit, Source free RL circuit, Singularity functions, Step response of an RC circuit, Step response of an RL circuit.

Unit II:

Solution of Second order networks

Introduction, Finding initial and final values, The Source free series RLC circuit, Source free parallel RLC circuit, Step response of a series RLC circuit, Step response of a parallel RLC circuit, General second order circuits.

Unit III:

Dual networks. Resonance and Magnetically Coupled Circuits

Duality and dual networks; series and parallel resonances; Mutual inductance, energy in a coupled circuit, Mutual coupled circuits, Dot Convention in coupled circuits, Linear transformer , Ideal Transformer.

Unit IV:

Two Port Networks

Two Port Networks, terminal pairs, relationship of two port variables, impedance parameters,admittance parameters, transmission parameters and hybrid parameters, interconnections oftwo port networks.

Unit V:

Electrical Circuit Analysis Using Laplace Transforms:

Review of Laplace Transform: Definition, properties; Inverse Laplace Transform; Analysis of electrical circuits using Laplace Transform for standard inputs, convolution integral, Circuit element models, Analysis of transformed network with initial conditions. Transfer function representation, Poles and Zeros.

Learning Resources:

1. C. K. Alexander and M. N. O. Sadiku, “Electric Circuits”, McGraw Hill Education, 2004.
2. W. H. Hayt and J. E. Kemmerly, “Engineering Circuit Analysis”, McGraw Hill Education, 2013.
3. D. Roy Choudhury, “Networks and Systems”, New Age International Publications, 1998.
4. M. E. Van Valkenburg, “Network Analysis”, Prentice Hall, 2006.
5. K. V. V. Murthy and M. S. Kamath, “Basic Circuit Analysis”, Jaico Publishers, 1999.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electromagnetic Field Theory

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):3:1:0	SEE Marks: 60	Course Code: U19PC320EE
Credits: 4	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
To impart the fundamentals and applications of Electromagnetic fields such that student will be able to understand, develop, and design various engineering applications involving electromagnetic fields	1. Evaluate Electric field Intensity and Potential to due to various charge configurations and dipole in different co-ordinate systems by applying Coulomb's Law and Gauss's Law. 2. Evaluate capacitance of different physical systems using the concepts of electrostatic fields. 3. Determine magnetic field Intensity due to various configurations in different co-ordinate systems using Biot-Savart's Law and Ampere's law. 4. Solve boundary Value problems in electric and magnetic fields applying Maxwell's equations. 5. Estimate attenuation constant, phase shift constant and skin depth of electromagnetic waves in conductors, dielectrics using the concepts of time varying Electromagnetic fields. 6. Minimize the electromagnetic Interference in the electromagnetic devices applying the concepts of Electromagnetic compatibility.

UNIT I:

Review of Vector Calculus: Vector algebra-addition, subtraction, components of vectors, scalar and vector multiplications, triple products, three orthogonal coordinate systems(rectangular, cylindrical and spherical), Conversion of a vector from one coordinate system to another. Vector calculus: differentiation, integration, vector operator del, gradient, divergence and curl; Divergence and Stoke's theorem

Static Electric Field: Coulomb's law, Electric field intensity, Electrical field Intensity due to point. Line, Surface and Volume charge distributions, Gauss's law and its applications, Absolute Electric potential, potential difference, Calculation of potential differences due to different configurations.

UNIT II:

Conductors, Dielectrics and Capacitance:

Electric filed in conductors, Electric field in Dielectrics,Electric dipole, Dipole moment, Polarization, Permittivity of dielectric materials, E and V due to dipole, Boundary conditions of perfect dielectric materials, Capacitance, Capacitance of parallel plate, co-axial and spherical capacitors, Capacitance of two wire line, Electrostatic Energy and Energy density . Poisson's equation, Laplace's equation, Solution of Laplace and Poisson's equation, Application of Laplace's and Poisson's equations. Current and current density, Ohms Law in Point form, Continuity equation of current

UNIT III:

Static Magnetic Fields : Biot-Savart's Law, Magnetic field intensity due to line of current, sheet of current, magnetic field intensity inside a solenid.Ampere Law, Magnetic flux and magnetic flux density, Scalar and Vector Magnetic potentials. Magnetic Dipole and Dipole moment.

Magnetic Forces, Materials and Inductance: Force on a moving charge, Force on a differential current element, Force between differential current elements, Nature of magnetic materials, Magnetization and permeability, Magnetic boundary conditions, Magnetic circuits, inductances (Solenoid and Toroid) and mutual inductances.

UNIT IV:

Time Varying Fields and Maxwell's Equations: Faraday's law for Electromagnetic induction, Motional Electromotive forces ,Displacement

current, Point form of Maxwell's equation, Integral form of Maxwell's equations,.

Electromagnetic Interference and Compatibility (Theoretical Aspects only):

Introduction to electromagnetic interference and electromagnetic compatibility (EMI & EMC) – sources and characteristics of EMI – control techniques of EMI – Grounding – Shielding – Filtering

UNIT V:

Electromagnetic Waves: Derivation of Wave Equation, Uniform Plane Waves, Maxwell's equation in Phasor form, Wave equation in Phasor form, Plane waves in free space and in a homogenous material. Wave equation for a conducting medium, Plane waves in lossy dielectrics, Propagation in good conductors, Skin effect, and Poynting theorem.

Learning Resources:

1. M. N. O. Sadiku, "Elements of Electromagnetics", Oxford University Publication, 6th edition September 2015.
2. W. Hayt, "Engineering Electromagnetics", McGraw Hill Education, 9th edition 2020.
3. A. Pramanik, "Electromagnetism - Theory and applications", PHI Learning Pvt. Ltd, NewDelhi, 2009.
4. A. Pramanik, "Electromagnetism-Problems with solution", Prentice Hall India, 2014.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING

Introduction to Entrepreneurship

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U19MC310ME
Credits: 0	CIE Marks: 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
The objectives of this course is to inspire students develop an entrepreneurial mind-set, educate about the resources and schemes available to start enterprises in India.	1. Demonstrate awareness about entrepreneurship and potentially be an entrepreneur. 2. Generate and analyse the business ideas 3. Know about the supporting organizations available to establish the business in the country. 4. Prepare a business plan.

Unit-I: Introduction to Entrepreneurship: Entrepreneurial characteristics, classification of enterprises, forms of business organizations, role of entrepreneurship in economic development, start-ups.

Idea Generation and Opportunity Assessment: Ideas in entrepreneurship, sources of new ideas, techniques for generating ideas, opportunity recognition, steps in tapping opportunities.

Unit-II: Institutions Supporting Small Business Enterprises: Central level Institutions: NABARD, SIDBI, NIC, KVIC, NIESBUD, SIDO, DST,EDI,FICCI,CII,ASSOCHAM etc., State level institutions: DICs, SFC, SIDC, etc., Other financial assistance.

Entrepreneurial skills, design thinking, selling and communication, project formulation and appraisal, preparation of project report, guidelines for report preparation, pitching of a potential venture.

Learning Resources:

1. Bruce R. Barringer and R. Duane Ireland, "Entrepreneurship: successfully launching new ventures", 3rd Edition, Pearson Prentice Hall, 2009.
2. P. Denning and R. Dunham, "The Innovator's Way", MIT Press: Cambridge, Massachusetts, 2010.
3. Arya Kumar, "Entrepreneurship", Pearson Education, Delhi, 2012.
4. Michael H. Morris, D.F. Kuratko, J G Covin, "Corporate Entrepreneurship and Innovation", Cengage Learning, New Delhi,2010.
5. Peter F. Drucker, "Innovation and Entrepreneurship", Routledge Classics, 2015.
6. Eric Ries, "The Lean Startup", Currency, 1st Edition, 2011.

Web Resources:

7. http://www.learnwise.org

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 1	Max. Marks for each Internal Test	: 20
2. No. of Assignments	: 1	Max. Marks for each Assignment	: 5
3. No. of Quizzes	: 1	Max. Marks for each Quiz Test	: 5

Duration of Internal Test: 90 minutes

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9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING

Electronics Engineering Lab-I

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: **U19ES311EC**
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
To develop an understanding of the characteristics of Electronic devices and circuits with Qualitative approach	1. Estimate the parameters from V-I characteristics of different diodes. 2. Design various rectifiers with different filter combinations. 3. Set up bias point in a transistor. 4. Estimate the parameters from BJT and FET characteristics. 5. Compute the bandwidth of RC coupled BJT and FET amplifiers from the frequency response.

CYCLE - I Experiments

1. V-I Characteristics of Si, Ge and Zener diode
2. Zener as Voltage Regulator
3. Design of Half wave and Full wave Rectifiers with and without Filters
4. Common Base characteristics of BJT and measurement of h – parameters
5. Common Emitter characteristics of BJT and measurement of h-parameters,
6. JFET Characteristics and measurement of its small signal parameters.
7. Applications of Cathode ray oscilloscope

CYCLE - II Experiments

8. BJT biasing.
9. Analysis and bandwidth calculation of Single stage RC coupled CE Amplifier.
10. Analysis and bandwidth calculation of Emitter follower.
11. Single stage FET Common Source RC coupled Amplifier
12. Analysis and bandwidth calculation of Source follower.
13. Analysis and bandwidth calculation of Multi stage RC coupled CE Amplifier.
14. Characteristics of UJT.

New Experiments

1. Transistor as a switch.
2. V-I Characteristics of Light Emitting Diode.

Mini Project(s)

Designing of various basic applications using devices.

Learning Resources:

1. Paul B. Zbar, Albert P. Malvino, Michael A. Miller, "Basic Electronics, A Text - Lab Manual", 7th Edition, TMH 2001.
2. S.Poorna Chandra,B. Sasikala, Electronics Laboratory Primer,A design approach, Wheeler publishing, 2005.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: **3 Hours**			

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9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Network Analysis Lab

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: **U19PC311EE**
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of Electrical Networks Laboratory is to provide Under Graduate Engineer a thorough understanding on the behavior of electrical networks with hands-on experience, so that the student will acquire in depth knowledge on network analysis, network elements, resonance and coupled circuits to analyze and apply electrical engineering problems.	1. Analyze the Sinusoidal response of R-L-C circuits. 2. Analyze the Step response of first order and second order circuits. 3. Understand and analyze the characteristics of resonance in electrical circuits. 4. Understand and analyze the Coupled circuits. 5. Evaluate two-port network parameters 6. Apply simulation tools for analyze electrical networks.

List of the Experiments:

1. Step response of first order R-L and R-C circuits.
2. Step response of series R-L-C circuits.
3. Characteristics of Series resonance
4. Characteristics of Parallel resonance
5. Polarity test in coupled circuits and testing of transformer.
6. Determination of impedance and admittance parameters of a two port network
7. Determination of hybrid parameters and transmission parameters a two port network.

8. Simulation of Sinusoidal steady state response for R-L and R-C circuits.

9. Simulation of Step response of R-L, R-C and R-L-C circuits.
10. Simulation of resonant circuits- Characteristics and analysis
11. Simulation of two port networks- Determining z, y, h and ABCD parameters.

Simulation of Step response for a second order system with addition of poles and zeros

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: **3 Hours**			

OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN B.E. III SEMESTER (2020-21)

Dept	Title	Code	credits
Civil	Green Buildings	U19OE310CE	2
CSE	Fundamentals Of Scripting Language	U190E310CS	2
CSE	Cyber Security	U190E320CS	2
ECE	Basics Of Electronic Communication	U19OE320EC	2
IT	Fundamentals of Data Structures	U19OE310IT	2
IT	Introduction to Linux	U19OE320IT	2
Mech.	Geometric Modelling	U19OE310ME	2
Mech.	Basic Heat Transfer For Electronic Systems	U19OE330ME	2
Maths	Linear Algebra And Its Applications	U190E310MA	2
Chemistry	Battery science and Technology	U20OE310CH	2
Chemistry	Corrosion science and it's application	U20OE320CH	2
Physics	Smart Materials & Applications	U20OE310PH	2

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF CIVIL ENGINEERING

GREEN BUILDINGS (Open Elective-I)

SYLLABUS FOR B.E. III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19OE310CE**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES Objectives of this course are to:	**COURSE OUTCOMES** Upon the completion of this course the students will be expected to:
1. Learn the principles of planning and orientation of buildings. 2. Environmental implications of natural and building materials along with green cover 3. Acquire knowledge on various aspects of green buildings	1. Explain the principles of building planning, its bylaws and provide facilities for rainwater harvesting 2. Relate safety to Green Technology 3. Understand the concepts of green buildings Understand rating systems of GRIHA and LEED

UNIT-I: Planning of building: Principles of planning, Relevant building bylaws, site selection for buildings, orientation of buildings, common errors in planning, Provision of rain water harvesting

UNIT-II: Buildings Energy-Implications: Environmental implications of buildings energy, carbon emissions, water use, waste disposal; Building materials: sources, methods of production and environmental Implications. Green cover and built environment

UNIT-III: Green Building Technologies: Introduction- Necessity - Concept of Green building. Principles of green building – Selection of site and Orientation of the building – usage of low energy materials – effective cooling and heating systems – effective electrical systems – effective water conservation systems

UNIT-IV: Certification Systems: Certification systems- Green Rating for Integrated Habitat Assessment (GRIHA) and Leadership in Energy and Environmental Design (LEED), case studies

Learning Resources:

1. Kumara Swamy N.Kameswara Rao A., Building Planning And Drawing, Charotar, Publications, 2013.
2. Shahane, V. S, "Planning and Designing Building", Poona, Allies Book Stall, 2004.
3. Michael Bauer, Peter Mösle and Michael Schwarz "Green Building – Guidebook for Sustainable Architecture" Springer, 2010.
4. Tom Woolley, Sam Kimmins, Paul Harrison and Rob Harrison "Green Building Handbook" Volume I, Spon Press, 2001.
5. Mili Majumdar, "Energy-efficient buildings in India" Tata Energy Research Institute, 2002.
6. TERI "Sustainable Building Design Manual- Volume I & II" Tata Energy Research Institute, 2009.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

FUNDAMENTALS OF SCRIPTING LANGUAGE (OPEN ELECTIVE-I)

(Common for CIVIL, ECE, EEE & MECH)

SYLLABUS FOR B.E. III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U190E310CS**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Acquire problem solving skills 2. Learn programming and solve problems using Python language	1. Design python programs using arithmetic expressions and decision making statements 2. Design modular python programs using functions 3. Develop programs using strings and list 4. Develop programs using tuples and dictionaries

UNIT-I: **Introduction to Python**: Variables, expressions and statements, order of operations

Conditionals: Modulus operators, Boolean expressions, logical operators, conditional execution, alternative executions, chained conditional, nested conditional

Iteration: while statement

UNIT-II: Functions: function calls, type conversion and coercion, mathematical functions, User-defined functions, parameters and arguments.

Recursion

UNIT-III: Strings: string length, string traversal, string slices and string comparison with examples, strings are immutable, find function, string module

List: list values, accessing elements, list traversal, list length, list membership, list and for loop, list operations with examples

UNIT-IV: **Tuples**: Mutability, tuple assignment, tuple as return values

Dictionaries: dictionary operations, dictionary methods, aliasing and copying, counting letters using dictionaries

Learning Resources:

1. Downey A, How to think like a Computer Scientist :Learning with Python, 1st Edition(2015), John Wiley
2. Lambert K.A, Fundamentals of Python –First Programs, 1st Edition(2015), Cengage Learning India
3. Perkovic L, Introduction to Computing using Python,2/e, (2015), John Wiley
4. Stewart Venit and Elizabeth Drake, Prelude to Programming: Concepts and Design, 6th Edition(2015),Pearson India
5. Mark J Guzdial, Introduction to Computing and programming in Python, 3rdEdition(2013), Pearson India
6. Allen Downey, Think Python, 2nd Edition(2015),Shroff Publisher Orielly
7. http://nptel.ac.in/courses/117106113/34
8. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-01sc-introduction-to-electrical-engineering-and-computer-science-i-spring-2011/python-tutorial/
9. www.scipy-lectures.org/intro/language/python_language.html

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CYBER SECURITY (OPEN ELECTIVE-I)

(Common for CIVIL, ECE, EEE & MECH)

SYLLABUS FOR B.E. III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U190E320CS**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To safeguard from threats and infection spread through the internet	1. Explain the concepts of confidentiality, availability and integrity 2. Explain the basics of fraud techniques used by a hacker 3. Explore the common exploitation mechanisms and inspect data sniffing over the network 4. Determine the ways an organization attempts to discover threats.

UNIT-I: **CYBER SECURITY FUNDAMENTALS:** Network and Security concepts: Information assurance fundamentals, Basic Cryptography, Symmetric Encryption, Public key encryption, Digital Signature, Key Exchange Protocols, DNS, Firewalls, Virtualization.

UNIT-II: ATTACKER TECHNIQUES AND MOTIVATIONS: How hackers cover their tracks, Tunneling techniques, Fraud Techniques: Phishing, Smishing, Vishing and Mobile Malicious Code, Rogue Antivirus, Click Fraud, Threat Infrastructure: Botnets, Fast-Flux, Advanced Fast-Flux.

UNIT-III: EXPLOITATION: Techniques to gain foothold: Shellcode, Integer overflow, Stack based buffer overflow, Format String Vulnerabilities, SQL Injection, Web Exploit Tools, Misdirection, Reconnaissance, and Disruption Methods

UNIT-IV:**MALICIOUS CODE, DEFENSE & ANALYSIS TECHNIQUES:** Self-replicating replicating code, Worms, Viruses, Evading Detection and Elevating Privileges: Obfuscation, Spyware, Token Kidnapping, Memory Forensics, Honeypots, Malicious code naming, Intrusion detection systems

Learning Resources:

1. James Graham, Ryan Olson, Rick Howard, "Cyber Security Essentials", Auerbach Publications , CRC Press, 2011
2. Mike Shema, "Anti-Hacker Tool Kit (Indian Edition)", Mc Graw Hill, 2014
3. Cyber Security - Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Nina Godbole and SunitBelpure, Publication Wiley , 2011
4. https://www.edx.org/micromasters/ritx-cybersecurity
5. https://www.coursera.org/specializations/cyber-security
6. http://nptel.ac.in/courses/106105031/
7. https://www.netacad.com/courses/security/introduction-cybersecurity

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

BASICS OF ELECTRONIC COMMUNICATION (OPEN ELECTIVE)

SYLLABUS FOR B.E. III – SEMESTER (for EEE, CSE & IT)

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19OE320EC**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Distinguish analog and digital Modulation techniques used in various Communication systems. 2. Explain why multiplexing methods are necessary in communications and compare FDM with TDM.	1. Analyze the power and transmission bandwidth of Amplitude and Frequency Modulated signals. 2. Understand the process of reproduction of base band signal. 3. Analyze various pulse analog and pulse digital Modulation Techniques. 4. Compare and contrast various Multiplexing techniques used in Communication systems. 5. Detect and correct errors present in bit stream data using parity check method.

UNIT – I

Amplitude Modulation: Introduction to Modulation, Need for Modulation, Ordinary Amplitude Modulation – Modulation index, Side bands, AM Power, Double Side Band Suppressed Carrier Modulation, Single Side Band Modulation, Vestigial Side Band Modulation, Applications of AM

UNIT – II

Angle Modulation: Angle Modulation fundamentals, Frequency Modulation – Modulation index and sidebands, Narrowband FM, Wideband FM, Principles of Phase Modulation, Frequency Modulation verses Amplitude Modulation, Applications of FM.

UNIT – III

Signal Sampling and Analog Pulse Communication: Ideal Sampling, Pulse Amplitude Modulation, Pulse Width Modulation, Pulse Position Modulation.

Digital Communication Techniques: Quantization, Digital Transmission of Data, Parallel and Serial Transmission, Data Conversion, Pulse Code Modulation, Delta Modulation.

UNIT – IV

Transmission of Binary Data in Communication Systems: Digital Codes, Principles of Digital Transmission, Transmission Efficiency, Modem Concepts and Methods – FSK, BPSK, Error Detection and Correction.

Learning Resources :

1. Louis E. Frenzel, Principles of Electronic Communication Systems, 3rd Edition. Tata Mcgraw Hill.
2. Wayne Tomasi, Electronic Communications Systems, 5th Edition, Pearson Education.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY
FUNDAMENTALS OF DATA STRUCTURES (Open Elective-I)

SYLLABUS FOR B.E. III-SEMESTER (for other Branches)

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19OE310IT**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
Explore efficient storage mechanisms for easy access, design and implementation of various data structures.	1. Identify appropriate linear data structure to solve a problem. 2. Illustrate the usage of linked lists for various applications 3. Demonstrate the usage of non-linear data structures – graphs & trees

UNIT – I:

Introduction to Data Structures: Performance Analysis: Time and Space complexity.

Introduction to Data Structures: Stacks, Representation of a Stacks using Arrays, Applications.

Queues: Representation of a Queue using array ,Applications.

UNIT – II:

Linked List: Introduction, Singly Linked list ,Operations on a Singly linked list, Dynamically Linked Stacks and Queues.

UNIT – III:

Doubly linked list: Introduction, Doubly linked list, Operations on a doubly linked list.

UNIT – IV:

Introduction to Non-Linear Data Structures: Trees and Graphs

Learning Resources :

1. Ellis Horowitz, Sartaj Sahni and Susan Anderson-Freed, Fundamentals of Data Structures in C, 2/e, Universities Press, 2008
2. Mark Allen Weiss, —Data Structures and Algorithm Analysis in C, Second Edition, Pearson Education, 1996
3. Robert Kruse, C.L.Tondo, Bruce Leung, Shashi Mogalla , — Data Structures and Program Design in C, Second Edition, Pearson Education, 2007
4. Jean-Paul Tremblay, Paul G. Sorenson,'An Introduction to Data Structures with Application', TMH, 2nd Edition.
5. Richard F, Gilberg, B.A. Forouzan, "Data Structures, A Pseudocode Approach with C", Cengage, 2nd Edition
6. http://nptel.ac.in/courses/106106127/

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY
INTRODUCTION TO LINUX (Open Elective – I)

SYLLABUS FOR –III SEMESTER
(Common for CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19OE320IT**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to:
Acquire basic skills for using Linux operating system.	1. Install Linux operating system and use desktop environment. 2. Identify and use Linux utilities to create and manage simple file processing operations. 3. Organize directory structures with appropriate security. 4. Configure and use Linux shell.

UNIT – I:
Introduction to Linux, Installing Linux, Running Linux from USB Drive, Understanding X Windows System and Desktop, Navigating through Linux Desktop and Managing files. Understanding Linux file system, listing files and directory attributes, Making files and directories, Listing and changing permissions and ownership.

UNIT – II:
Understanding the Linux Shell, Understanding aliases, Using the shell from console or terminals, using command history and tab completion, Connecting and expanding commands, Creating aliases, Making shell settings permanent, Using man pages and other documentation.

UNIT – III:

Introduction to Shell Scripting: Reading input from the user, logical operators, Arithmetic operators, Environment variables, Read-only variables, command line arguments, working with arrays.

UNIT – IV:

Decision Making: Conditional constructs, Functions: Introduction to functions, passing arguments, sharing of data, declaration of local variables, returning information from functions, running functions in the background, creating a library of functions

Learning resources:

1. Introduction to Linux – A Hands On Guide, MachteltGarrels.
2. Ganesh SanjivNaik, Learning Linux Shell Scripting, Packt Publishing, 2015. Open Source Community
3. https://linuxjourney.com/
4. https://nptel.ac.in/courses/117106113/

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

Department of Mechanical Engineering

GEOMETRIC MODELLING (Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19OE310ME**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of this course is to understand wire-frame modelling & transformations, surface, solid modelling and assembly modelling techniques.	1. define various geometric modelling techniques and development of wire frame modelling for synthetic entities by using mathematical equations. 2. formulate 2D transformations for geometric model by matrix approach. 3. development of various surfaces using surface modelling. 4. development of solid models using various solid modelling schemes and Study various Assembly constraints, Assembly tree and develop few assembled models.

UNIT-I: INTRODUCTION TO CAD

product life cycle, conventional design and computer aided design.

Wire Frame Modelling: wire frame entities and their definitions. Interpolation and approximation of curves. Concept of parametric and non–parametric representation of circle and helix curves, demonstration of 2D geometry through CAD software.

UNIT-II: SYNTHETIC CURVES

Parametric representation of cubic spline, Bezier and B– spline curves, continuity, properties and characteristics of splines. Concepts of NURBS, synthetic curves demonstration.

2D transformation and their mathematics: Translation, scaling, rotation, Homogeneous co-ordinates, Concatenated transformations.

UNIT-III: SURFACE MODELING

Analytical surfaces: Definitions of planar, surface of revolution, Tabulated cylinder. Synthetic surfaces: Cubic and Bezier surfaces, visualization of different surfaces.

UNIT-IV: **SOLID MODELLING**

C– rep and B– rep and feature instancing, Octree encoding, spatial enumeration, cell decomposition, sweeping approaches. Euler's representation of solid models, creation of solid model in CAD software.

ASSEMBLY MODELING: Assembly constraints, assembly tree, top down assembly, bottom up assembly, development of a history tree for a simple assembly, demonstration of simple assembly.

Learning Resources:

1. Ibrahim Zeid, "CAD/CAM- Theory and Practice", McGraw-Hill Inc. New York, 2011.
2. Steven Harrington, "Computer graphics: a programming approach", McGraw-Hill, 1987.
3. David Rogers, J. Alan Adams, "Mathematical elements for computer graphics", McGraw Hill, 1990.
4. McConnell, J. J. "Computer graphics theory into practice", Jones and Bartlett Publishers, 2006.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	:	2	Max. Marks for each Assignment	:	5
3. No. of Quizzes	:	2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

Department of Mechanical Engineering

BASIC HEAT TRANSFER FOR ELECTRONIC SYSTEMS (Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19OE330ME**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of this course is to study the basic laws of thermodynamics and the cooling of electronic equipment along with basic modes of heat transfer	1. understand and apply the first law of thermodynamics to various engineering problems 2. understand and apply the second law of thermodynamics to various engineering problems 3. formulate heat conduction problems in rectangular, cylindrical and spherical coordinate system by transforming the physical system into a mathematical model. 4. analyse heat transfer processes involved in cooling of electronic components

UNIT-I: INTRODUCTION TO THERMODYNAMICS

Basic Concepts-System, Types of Systems, Control Volume, Surrounding, Boundaries, Universe, Macroscopic and Microscopic viewpoints, Thermodynamic Equilibrium, State, Property, Process, Cycle – Reversibility – Quasi–static process; Zeroth Law of Thermodynamics. Energy in state and in transition-Work and Heat. PMM I – Joule's Experiment – First law of Thermodynamics, First law applied to – process.

UNIT-II: SECOND LAW OF THERMODYNAMICS

Limitations of the First Law; Second Law of Thermodynamics- Thermal Reservoir, Heat Engine, Heat pump, Parameters of performance, Kelvin-Planck and Clausius Statements and their Equivalence / Corollaries, PMM

II, Carnot cycle and its specialties, Clausius inequality, introduction to entropy.

UNIT-III: HEAT TRANSFER

Heat Transfer – Different Modes, governing laws and application to heat transfer: Fourier, Newton, Stefan–Boltzmann laws; general heat conduction equation: Cartesian co-ordinates (derivation), Steady state one-dimensional heat conduction through slabs, hollow cylinders and spheres (numericals); Concept of thermal resistance in series and parallel (composite systems), overall heat transfer coefficient; Critical radius of insulation: concept, derivation and numerical: with and without internal heat generation.

UNIT-IV: INTRODUCTION TO COOLING OF ELECTRONIC EQUIPMENT

Needs & Goals; Temperature effects on different failure modes; Electronic equipment for airplanes, missiles, satellites and spacecraft; electronic equipment for ships & submarines; electronic equipment for communication systems and ground support system; chassis and circuit boards cooling.

Learning Resources:

1. P.K. Nag, “Engineering Thermodynamics”, Tata Mc Graw Hill, 4th Edition, 2008.
2. Yunus Cengel & Boles, “Thermodynamics – An Engineering Approach”, TMH New Delhi, 2008.
3. Sachadeva R.C., “Fundamentals of Engineering Heat and Mass Transfer”, New Age International (P) Ltd Publishers, New Delhi, 2010.
4. Dave S. Steinberg, "Cooling Techniques for Electronic Equipment", Second Edition, John Wiley & Sons, 1991.
5. Yunus Cengel & Afshin J Ghajar, “Heat and Mass Transfer: Fundamentals & its Applications”, Mc Graw Hill, 5th Edition, 2013.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF MATHEMATICS

LINEAR ALGEBRA AND ITS APPLICATIONS (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19OE310MA**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Study the concept of Vector Spaces, Subspaces, Linear Span, Linear Dependence and Independence of vectors.	**1. Solve the** problems on Vector Spaces and Linear Dependence and Independence of vectors.
2. Understand the meaning of Basis and Dimension of a vector Space and Co-ordinates.	**2. Determine** the Basis and Dimension of a Vector Space and find the Co-ordinates.
3. Understand the meaning of Linear transformation, properties.	**3. Determine** Linear Transformation, Range and Kernel and Matrix of Linear Transformation.
4. Understand Range and Kernel, Rank-Nullity and Matrix of Linear Transformation.	**4. Determine** Range and Kernel, Rank-Nullity and Matrix of Linear Transformation.
5. Understand Inner Product Spaces, Orthonormal sets, Gram-Schmidt's Orothogonalization process.	**5. Determine**distance, orthogonal, orthonormal sets and construct orthonormal basis based on Gram-Schmidt's Orothogonalization process.

UNIT – I (8 classes)

Vector Spaces-Definition of a Vector Space, Subspaces, Basis and Dimension, Coordinates and Change of Basis.

UNIT – II (6 classes)

Linear Transformation -I

Definition of Linear Transformation- Properties of Linear Transformations – Product of Linear Transformations – Algebra of Linear Operators.

UNIT – III(6 classes)

Linear Transformation -II

Range and kernel of a linear map – Dimension of Range and Kernel - Rank and nullity – Inverse of linear transformation - Rank nullity theorem(without Proof)- Matrix of Linear Transformation**.**

UNIT – IV(8 classes)

Inner Product Spaces-The Dot Product on R and Inner Product Spaces, Orthonormal Bases, Orthogonal Complements, Application: Least Squares Approximation.

Text Books:

1. Introduction to linear algebra with applications, Jim DeFranza, Daniel Gagliardi, Tata McGraw-Hill
2. An introduction to Linear Algebra, V.P Mainra, J.L Arora, Affiliated to East-West Press Pvt Ltd

Reference Books:

1. Elementary Linear algebra, Anton and Rorres, Wiley India Edition
2. Advanced Engineering Mathematics, Erwin Kreysing, Wiley Publication
3. Elementary Linear algebra, ron Larson, Cengage Learning

Online Resources:

4. **http://tutorial.math.lamar.edu/Classes/DE/DE.aspx**
5. **http://mathworld.wolfram.com/topics**
6. **http://www.nptel.ac.in/course.php**

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF CHEMISTRY

Battery science and Technology (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U20OE310CH**
Credits: 2	CIE Marks: 40	Duration of SEE : 1.5 Hours

COURSE OBJECTIVES The objectives of the course are	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To introduce the various terms to understand the efficiency of batteries. 2. To know the relevant materials required for the construction of primary and secondary batteries. 3. To familiarize with the reactions involved during charging and discharging processes. 4.To focus on the need of fuel cells and the concept of their construction and functioning. 5. To emphasize on the merits and demerits of each type of battery.	1. Discuss the construction, electrochemistry, technology and applications of selected primary batteries. 2. Discuss the construction, electrochemistry, technology and applications of few secondary batteries. 3. Explain the working principle, electrochemistry, technology and applications of prominent fuel cells. 4. Evaluate different batteries or fuel cells in order to select a suitable battery or fuel cell for a given application

UNIT-I: BATTERIES- FUNDAMENTALS

Introduction and types of batteries: Primary and secondary.

Battery characteristics: Free energy change, electromotive force of battery, ampere-hour, capacity, power, power density, energy density, efficiency, cycle life, tolerance to service conditions, performance characteristics.

UNIT-II: PRIMARY BATTERIES

Construction, chemistry and technology of Zinc-Air Battery, Zinc –HgO battery and their applications.

Primary lithium batteries: Soluble cathode cells, solid cathode cells- Lithium manganese dioxide, solid electrolyte cells- Lithium polymer electrolyte battery- Applications. Reserve battery- Electrochemistry of perchloric acid cell- applications.

UNIT-III: SECONDARY BATTERIES

Construction, chemistry and technology of maintenance free lead acid battery (MFLA), valve regulated lead acid battery (VRLA), absorbed glass mat lead acid battery (AGMLA) - comparision between lead acid battery and VRLA along with advantages - Construction, electro chemistry and applications of Nickel-Cadmium battery, Nickel metalhydride battery.

Lithium ion batteries: Construction, chemistry and applications of liquid organic electrolyte cells, polymer electrolyte cells, lithium ion cells.

UNIT- IV: FUEL CELLS

Introduction, classification based on temperature and nature of electrolyte. Working principle, components, applications and environmental aspects of alkaline fuel cell (AFC)- Hydrogen-Oxygen alkaline fuel cell, Molten carbonate fuel cell (MCFC), Polymer electrolyte membrane fuel cell (PEMFC), Solid oxide fuel cell (SOFC).

Books:

1. P.C.Jain and Monica Jain, “Engineering Chemistry”, DhanpatRai and Pub, Co., New Delhi (2002)

2. S.S. Dara “A text book of engineering chemistry” S.Chand and Co.Ltd., New Delhi (2006).

3. Dell R. M. and Rand D. A. J., “Understanding Batteries”, Royal Society of Chemistry, UK, 2001.

4. Chemistry of Engineering Meterials by R.P Mani and K.N.Mishra, CENGAGE learning
5. ShasiChawla, "Text Book of Engineering Chemistry", DhanpatRai Publishing Company, NewDelhi,2008.
6. BalasubramanianVishwanathan, "Energy sources", Elsevier Publications.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF CHEMISTRY

Corrosion science and it's application (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U20OE320CH**
Credits: 2	CIE Marks: 40	Duration of SEE : 1.5 Hours

COURSE OBJECTIVES The objectives of the course are	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To acquaint with the causes and factors influencing the rate of corrosion. 2. To understand the different types of corrosion like dry, wet and galvanic corrosion and their relative impact. 3. To familiarize with few preventive methods of corrosion. 4. To know various industrial methods like electroplating, electroless plating.	1.Explain different types of corrosion with suitable examples. 2.Discuss different factors that affect corrosion and passivation of metals. 3.Select a suitable metallic coating, organic coating and inhibitors for corrosion control of the equipment in a given application. 4.Discuss the principles and applications of cathodic protection and surface conversion coatings for corrosion control. 5.Apply the knowledge of various methods of corrosion control to suggest a solution for corrosion control of a given equipment in a given industrial application.

UNIT-I: CHEMICAL AND ELECTROCHEMICAL CORROSION

Introduction - gravity, cause, chemical and electrochemical corrosion, Pilling – Bed worth rule, effect of nature of oxide layer on rate of chemical corrosion. Galvanic corrosion, electrochemical series and galvanic series.

Formation of anodic and cathodic areas, Differential aeration corrosion - pitting, waterline corrosion, crevice corrosion, stress corrosion andcorrosion fatigue. Passivation of metals, polarization curve of passivating metals, effect of pH and potential for iron(pourbaix diagram) and the polarization curve of iron.

Factors influencing corrosion

a. Nature of metal: Relative position of metal in galvanic series, over voltage, relative areas of anode and cathode and nature of corrosion product.

b. Nature of environment: Temperature, pH, humidity and dissolved oxygen.

UNIT-II: CORROSION CONTROL BY METALLIC COATINGS

Metallic coatings: Types - anodic and cathodic. Pre treatment of surface of base metal. Methods of application of metallic coatings: Hot dipping-galvanization - applications of galvanized RCC steel bars. Cladding, electro plating and electroless plating- Principle and their differences.Electroplating of Cu and Cr on Fe, electroless plating of Ni and Cu on insulators, Preparation of printed circuit board (PCB) by electrolessplating.

UNIT-III: CORROSION CONTROL BY ORGANIC COATINGS AND INHIBITORS

Organic Coatings: Paints – constituents and their functions. Vitreous enamel coatings.Varnishes.Super hydrophobic and self healing coatings. Epoxy coatings on RCC steel bars- impervious coatings.

Corrosion inhibitors: Anodic, cathodic and vapour phase inhibitors.

UNIT-IV: CORROSION CONTROL BY CATHODIC PROTECTION AND SURFACE MODIFICATION

Cathodic protection: Principle, sacrificial anodic protection (SAP), impressed current cathodic protection (ICCP). Application of cathodic protection for bridges, ship hulls and underground pipelines.

Surface conversion coatings: Carburizing, nitriding, cyaniding.

Books:

1. P.C.Jain and Monica Jain, “Engineering Chemistry”, DhanpatRai Pub, Co., New Delhi (2002)
2. S.S. Dara “A text book of engineering chemistry” S.Chand and Co.Ltd.,New Delhi (2006).
3.ShasiChawla, “Text Book of Engineering Chemistry”, DhanpatRai Publishing Company, NewDelhi (2008).
4. Wiley Engineering chemistry, Wiley India pvt Ltd, II edition.
5. Chemistry in engineering and technology by J.C. Kuriacose and Rajaram.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

Department of PHYSICS
Smart Materials & Applications (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U20OE310PH**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The Students will be able to:	**COURSE OUTCOMES** On completion of the course, students will be able to
1. grasp the concepts of peizo and ferro electric materials 2. Learn fundamentals of pyro and thermo electric materials 3. gain knowledge on shape memory alloys 4. acquire fundamental knowledge on chromic materials	1. summarize various properties and applications of peizo and ferro electric materials 2. apply fundamental principles of pyro and thermo electricity in relevant fields of engineering 3. acquaint with various types of shape memory alloys and their properties and applications 4. appreciate the importance of chromic materials in engineering field.

UNIT I: PIEZO AND FERRO MATERIALS

Piezo electric effect and inverse piezoelectric effect, Piezo electric materials, Structure of Quartz crystal, Piezoelectric oscillator, Magnetostriction, Magnetostriction oscillator, piezo-electric sensors, applications of Piezo-electric materials.

Characteristics and properties of ferro-electric materials, Structure of Barium Titanate, Curie-Weiss law, applications of Ferro electric materials

UNIT II: PYRO AND THERMO-ELECTRIC MATERIALS

Pyroelectricity: pyro electric effect, pyro electric materials, pyro-electric sensors.

Thermoelectricity: thermoelectric effect, Seebeck effect, Peltier effect, thermoelectric sensor, Properties and applications of thermoelectric materials, thermoelectric generator and Thermoelectric cooler.

UNIT III: SHAPE MEMORY MATERIALS

Introduction to shape memory alloys (SMA)- Shape Memory Effect (SME) different phases of Shape memory alloys, Austenite, Martensite, Properties and characteristics of engineering SMAs**,** Super elasticity, one and two way shape memory effects, Properties of Ni-Ti shape memory alloy, Cu-based shape memory alloys, biomedical Materials, Advantages, disadvantages of SMAs, Applications of SMAs.

UNIT-IV: CHROMIC MATERIALS

Electro-chromaticity, Electro-chromic materials, Electro-chromic sensors and devices.

Photo-chromaticity, Photo-chromic materials, Photo-chromic sensors and devices.

Thermo-chromaticity, thermo-chromic materials, thermo-chromic sensors and devices.

Smart fluids: Magneto-rheological and Electro-rheological fluids.

Learning Resources:

1. K. Otsuka and C M Wayman, Shape memory materials, Cambridge university press, 1998.
2. TW Duerig, KN Melton, D Stockel, CM Wayman, Engineering aspects of shape memory alloys, Butterworth-Heinemann, 1990
3. A.K. Sawhney, A Course in Electronic Measurements and Instrumentation, Dhanpat Rai & Sons, 2015
4. D. Patranabis, Sensors and Transducers, PHI Learning Pvt. Ltd., 2013

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) :: IBRAHIMBAGH, HYDERABAD – 500 031.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SCHEME OF INSTRUCTION AND EXAMINATION (R-19) :: B.E. - EEE : FOURTH SEMESTER (2020 - 21)

B.E (EEE) IV Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U19HS430EH	Skill Development-II : Communications Skills in English	2	-	-	3	60	40	2
U19HS010EH	Human Values and Professional Ethics -I	1	-	-	2	40	30	1
U19BS410MA	Numerical methods, Probability and Statistics	3	-	-	3	60	40	3
U19ES410EC	Electronics Engineering-II	3	-	-	3	60	40	3
U19PC410EE	Digital Electronics	3	-	-	3	60	40	3
U19PC420EE	Electrical Measurements & Instrumentation	3	-	-	3	60	40	3
U19PC430EE	Electrical machines - I	2	1	-	3	60	40	3
U19OE4XXXX	Open Elective-II	3	-	-	3	60	40	3
PRACTICALS								
U19ES411EC	Electronics Engineering Lab-II	-	-	2	3	50	30	1
U19PC421EE	Electrical Measurements and Instrumentation Lab	-	-	2	3	50	30	1
U19PC431EE	Electrical Machines - I Lab	-	-	2	3	50	30	1
	TOTAL	**20**	**01**	**06**		**610**	**400**	-
	GRAND TOTAL	**27**				**1010**		**24**
Student should acquire one online course certification equivalent to two credits during III Sem to VII sem.								

Note: 1. One hour is allocated for Library/Sports/Proctorial Interaction

2. Two hours are allocated for CCA-II

3. Two hours are allocated for CC/TC/RC

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF Humanities and Social Sciences
Skill Development-II : Communications Skills in English
SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: **U19HS430EH**
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

Course Overview:

Be it career or relationships, the harsh truth in today's global scene is that the future of any person is affected strongly by his//her communication skill in English. The four major skills of language learning, listening, speaking, reading and writing provide the right key to success.

Course Objective:

The main objective of this finishing school curriculum is to involve content for all the above mentioned four skills in teaching English and to get students proficient in both receptive and productive skills.

Overview of the delivery Methodology:

- Students will be given Reading/Listening exercises that they have would have to do as a prerequisite for the class room intervention
- Every Session will have activities on all the four skills. Listening, Speaking, Reading and Writing
- The Writing and Reading exercises will be given in the workbook and will carry marks
- Vocabulary exercises will also be part of every session
- Students will be asked to summarise their takeaways in every class in three sentences.

- The Lateral entry students will be given a self study plan for language enhancement and will be given extra reading and writing exercises. This will be done through Talent Sprint's online portal
- To personalize the learning a variety of case studies and structured problem solving activities will be given in small groups and the trainers will facilitate peer reviews.
- Integration of continuous grading (for assignment 1 and 2), instant feedback, (peer review sheets) clear goals, rewards (certificates and appreciation kits), have been included this time for positive reinforcement.

Unit 1: Discussions and Debates

Module Overview:

The module enables the students to build strategies for effective group interaction and help them in developing decisive awareness and personality maintaining emotional balance.

Learning Outcome:

The students should be able to:

- Participate in group and forum discussions by providing factual information, possible solutions, and examples.
- Debate on a topic by picking up the key points from the arguments placed.

Competencies:

- Analytical and Probing Skills
- Interpersonal Skills
- Comprehending key points of the debate and note decisive points including supporting details.
- Construct a logical chain of arguments and decisive points.

Sessions:

1. Six Thinking Hats

2. Biker B
3. Initiation Techniques
4. Generating points (VAP,SPELT,KWA)
5. Summarization Techniques

Unit 2: Powerful Presentations

Unit Overview:

Presentations need to be very straightforward and logical. This Module is designed to introduce students to an ideal structure for a presentation

Learning Outcome:

Students should be able to:

- Provide logical conclusions to the topics under discussion.
- Prepare, present, and analyze reports.
- Analyzing the points discussed.
- Connecting all points without gaps.
- Identifying clinchers.
- Communicating the decisions

Sessions:

1. Persuasion skills
2. Debating Structure and Content
3. Toulmin Model
4. Case Study Based Group Discussions

Unit 3 - Effective Technical Writing

Unit Overview:

Organizing writing in a logical order, using headings and easy-to-see bookmarks, and formatting table information are important for technical writing. This module is designed to give the trainees inputs on how to organize using Information Mapping. Editing plays an important role in Technical Writing. In this unit the trainees are

also given inputs to correct spelling, language and Punctuation errors.

Learning Outcome:
The Students should be able to choose appropriate words and tone to present accurate, specific, and factual written documents

Competencies:

- Reporting an incident
- Writing/Presenting an essay
- Language and Vocabulary

Sessions:

1. Information Mapping
2. Report writing
3. Memos
4. SoP (statement of purpose)
5. MoM (Minutes of the Meeting)

Unit 4 - Reading for Content and Context

Unit Overview:

This course is designed to develop and improve reading and study skills needed for college work. Topics include identifying main idea and supporting details, determining author's purpose and tone, distinguishing between fact and opinion, identifying patterns of organization in a paragraph or passage and the transition words associated with each pattern, recognizing the relationships between sentences, identifying and using context clues to determine the meanings of words, identifying logical inferences and conclusions, and recognizing the point and support of an argument.

Learning Outcomes

Upon completion of the course, students should be able to:

1. Compose a summary of beginning high level reading text that identifies the thesis and key supporting details.
2. Summarize with 70% comprehension.
3. Apply reading skills, including how to approach different types of literature.

Competencies

- Distinguish facts from opinions.
- Make inferences
- Identify author's purpose, point of view, tone, and method of development.
- Comprehend the use of figurative language.
- Synthesize information gathered from reading in order to give informed opinion.

Sessions:

1. Skimming and Scanning Techniques
2. Recognition of author's purpose
3. Awareness of stylistic differences
4. Evaluation of fact and opinion
5. Discernment of fact and opinion

Unit 5 – Critical Reading Skills

Unit Overview:

Research shows that good reading skills can lead to well written assignments. In this unit, students will learn reading strategies to understand and retain information, to understand the organization of reading passages, and strategies for learning and retaining vocabulary. Building on these basic strategies, students will develop skills to critically analyze texts. In addition, students will practice and develop paraphrasing and summarizing skills. Students will receive ongoing feedback on their assignments throughout the course.

Learning Outcomes

- Recognition of propaganda techniques
- Present vocabulary building methods
- Use comprehension and vocabulary strategies to raise reading rate.

Competencies:

The student will enhance the ability to apply the following critical thinking skills when reading:

a. Understand the meaning of new vocabulary through:

1) Context clues, e.g., synonyms, antonyms, examples, definitions, and restatements, etc.

2) Roots and affixes

b. Analyze text, e.g., simple outlining and note taking, summarize, draw conclusions, and apply information to personal experiences.

Sessions

1. Contextual Vocabulary
2. Theme Detection
3. Note making and Inference
4. Main idea identification
5. Précis Writing
6. Critical Response

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

Human Values and Professional Ethics -I

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U19HS010EH
Credits: 1	CIE Marks: 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Get a holistic perspective of value-based education.	1. Gain a world view of the self, the society and the profession.
2. Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations.	2. Start exploring themselves in relation to others and their work – constantly evolving into better human beings and professionals.
3. Understand professionalism in harmony with self and society.	3. Inculcate Human values into their profession.
4. Develop ethical human conduct and professional competence.	4. Obtain a holistic vision about value-based education and professional ethics.
5. Enrich their interactions with the world around, both professional and personal.	

UNIT-1 Understanding the need and process for Value Education

a) Basic Human Aspirations -Philosophy, purpose & objective of Life
Understanding and living in harmony at various levels-with self, family, society and nature.

b) **Ethical and moral values -** Truth, honesty, empathy, integrity, consistency,
cooperation, confidentiality, trustworthiness, self-respect, self-restraint, self-assertion, self-reliance.

UNIT-2 Holistic Understanding of Professional Ethics and Human Values

a) At the level of individual: as socially and ecologically responsible engineers and technologists.

b) At the level of society: as mutually enriching organizations, being work conscious.

c) Recognizing the value of time and respecting time of self and others.

MODE Of DELIVERY

• **Questionnaires** • **Quizzes** • **Case-studies** • **Observations and practice** • **Home and classroom assignments**	• **Discussions** • **Skits** • **Short Movies/documentaries** • **Team tasks and individual tasks** • **Research based tasks** • **Viva**

Relevant Websites, CD's and Documentaries

- Value Education website, Http://www.universalhumanvalues.info UPTU website, Http://www.uptu.ac.in
- Story of stuff, Http://www.storyofstuff.com
- AlGore, As Inconvenient Truth, Paramount Classics ,USA
- Charlie Chaplin, Modern Times, United Artists, USA
- IIT Delhi, Modern Technology-The Untold story-Anand Gandhi, Right Here Right Now, Cyclewala production.

Learning Resources:

1. PL Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
2. B.L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.

3. A.N Tripathy, 2003 Human values, New Age International Publishers.
4. EG Seebauer & Robert L. Berry,2000, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 1	Max. Marks for each Internal Test	:	20
2. No. of Assignments	: 2	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 2	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF MATHEMATICS

Numerical methods, Probability and Statistics

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U19BS410MA
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
1. **Study t**he methods to solve algebraic and transcendental equations, apply numerical methods to interpolate 2.**Understand** numerical differentiation and integrate functions and to solve differential equations using numerical methods. 3. **Understand** Random variables Probability Distributions. 4. **Understand** tests of hypothesis for large and small samples**.** **5. Study** the method to fit different curves to a given data, how Correlation between variables can be measured.	1. **Solve** algebraic and transcendental equations using Bisection method Regula-Falsi, Newton-Rap son and apply numerical methods to interpolate. 2. **Solve** problems using numerical differentiation using interpolation approach and differential equations using numerical methods. 3. **Apply** various probability distributions to solve practical problems. 4. **Estimate** unknown parameters of populations and apply the tests of hypotheses for large and small samples. 5. **Solve** problems to fit various curves to the given data using curve fitting, and also to find co-efficient of correlation and to determine regression lines and their applications.

UNIT-I: (10 Hours)

Interpolation:

Finite Differences- Interpolation- Newton's Forward and Backward Interpolation Formulae – Interpolation with unequal intervals – Lagrange's Interpolation Formula – Divided differences – Newton's Divided difference formula.

UNIT-II: (10 Hours)

Numerical Solutions of ODE:

Numerical Differentiation -Interpolation approach- Numerical Solutions of Ordinary Differential Equations of first order - Taylor's Series Method - Euler's Method - Runge-Kutta Method of 4^{th} order(without proofs)

UNIT-III (10 Hours)

Probability:

Random Variables - Discrete and Continuous Random variables- Properties- Distribution functions and densities - Expectation – Variance – Normal Distribution.

UNIT-IV: (12 Hours)

Test of Hypothesis:

Introduction -Testing of Hypothesis- Null and Alternative Hypothesis - Errors- -Level of Significance – Confidence Intervals-Tests of Significance for small samples - t-test for single mean - F- test for comparison of variances - Chi-square test for goodness of fit – Introduction to Design of experiments.

UNIT-V: (10 Hours)

Curve Fitting:

Curve fitting by the Method of Least Squares - Fitting of Straight line-Regression - Lines of Regression Correlation – Karl Pearson's Co-efficient of Correlation.

Learning Resources:

1. Text Books:

1. R.K. Jain & S.R.K. Iyengar, Advanced Engineering Mathematics, Third Edition, Narosa Publications, 2007.
2. Higher Engineering Mathematics, Dr.B.S Grewal 40th Edition, Khanna Publishers.
3. Probability, Statistics and Random Processes, T. Veerarajan , Tata MCGraw Hill Education Private Ltd.

2. Reference Books:

1. Advanced Engineering Mathematics, Kreyszig E, 8 th Edition, John Wiley & Sons Ltd, 2006.
2. A text book of Engineering Mathematics by N.P.Bali & Manish Goyal, Laxmi Publication.
3. Fundamentals of Mathematical Statistics, Gupta & Kapoor, Sultan chand & sons, New Delhi.

3. Online Resources :

1. **http://tutorial.math.lamar.edu/Classes/DE/DE.aspx**
2. **http://mathworld.wolfram.com/topics**
3. **http://www.nptel.ac.in/course.php**

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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2. No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING

Electronics Engineering-II

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19ES410EC**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To familiarize the student with the analysis & design of feedback amplifiers, oscillators, multistage amplifiers and power amplifiers. 2. To understand the operation and design of linear and non-linear wave shaping circuits. 3. To study and analyze the frequency response of amplifier circuits.	1. Analyze and design various feedback and multistage amplifiers. 2. Design a sinusoidal oscillators. 3. Analyze drift compensation techniques and differential amplifiers. 4. Design and analyze linear wave shaping circuits. 5. Design and analyze various non-linear wave shaping Circuits.

UNIT - I : Wave-Shaping Circuits

RC low pass and high pass circuit, response to step, pulse, Ramp and square wave inputs, Clipping circuits for single level and two levels, clamping circuits.

UNIT - II : Multi stage amplifiers

Cascading amplifier stages, classification of amplifiers, frequency responses of RC coupled amplifiers, Transformer coupled amplifiers, effect of cascading on band width.

D.C. Amplifiers: Problems of D.C amplifiers, Drift Compensation techniques, Differential amplifiers, importance of CMRR.

UNIT - III : Feedback amplifiers

Concept of Feedback, General characteristics of negative feedback

amplifier, Effect of negative feedback on input and output impedances, voltage and current, series and shunt feedbacks.

UNIT - IV : Oscillators

Barkhausen criterion, RC oscillators, Wien bridge, phase shift, LC Hartley and Colpitts oscillator, Crystal oscillators (BJT only), frequency stability of oscillator.

UNIT - V : Power amplifiers

Classification of power amplifiers, Analysis of class A and B power amplifiers, Harmonic distortion, Power dissipation, efficiency calculations, Push pull amplifiers, Complementary symmetry Power amplifiers.

Learning Resources:

1. Jacob Millman and Christos C. Halkias, Satyabratajit "Electronics Devices and Circuits", McGraw hill, 3rd edition, 2010.
2. Jacob Millman and Christos C. Halkias, Chetan D Parikh, "Integrated Electronics" Mc Graw Hill, 2009.
3. Robert L.Boylestad and Louis Nashelsky,"Electronic Devices and Circuit Theory", PHI, 11th edition 2015.
4. A. S. Sedra and K. C. Smith, "Microelectronic Circuits", Seventh Edition New York, Oxford University Press, 2014.
5. Jacob millman and Taub: "Pulse, Digital and switching wave forms", Mc Graw hill, 2003.
6. https://nptel.ac.in/courses/108102095/
7. https://nptel.ac.in/courses/117101106/

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2.	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Digital Electronics

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U19PC410EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To understand number representation and conversion between different representation in digital electronic circuits. 2. To analyze logic processes and implement logical operations using combinational logic circuits. 3. To understand characteristics of memory, sequential circuits, Programmable Devices, PLA, PAL and FPGA and their classification, A/D, D/A Converters.	1. Understand working of logic families and logic gates. 2. Design and implement Combinational and Sequential logic circuits. 3. Understand the process of Analog to Digital conversion and Digital to Analog conversion. 4. Be able to use PLDs to implement the given logical problem.

UNIT-I:

Fundamentals of Digital Systems and logic families:

Digital circuits, AND, OR, NOT, NAND, NOR and Exclusive-OR operations, Boolean algebra, examples of IC gates, number systems-binary, signed binary, octal hexadecimal number, binary arithmetic, one's and two's complements arithmetic, codes, error detecting and correcting codes, characteristics of digital lCs, digital logic families, TTL, Schottky TTL and CMOS logic.

UNIT-II:

Combinational Digital Circuits :

Standard representation for logic functions, K-map representation, simplification of logic functions using K-map, minimization of logical functions. Don't care conditions, Q-M method of function realization,

Multiplexer, DeMultiplexer/Decoders, Adders, Subtractors, BCD arithmetic, carry look ahead adder, serial adder, digital comparator, parity checker/generator, code converters, priority encoders.

UNIT-III:

Sequential circuits and systems:

The clocked SR flip flop, J- K-and D types flip flops, applications of flip flops, shift registers, applications of shift registers, serial to parallel converter, parallel to serial converter, ring counter, ripple (Asynchronous) counters, synchronous counters, counters design using flip flops.

UNIT-IV:

A/D and D/A Converters :

Digital to analog converters: weighted resistor/converter, R-2R Ladder D/A converter, specifications for D/A converters, examples of D/A converter lCs, Analog to digital converters: Successive approximation A/D converter, Dual slope A/D converter, specifications of A/D converters, example of A/D converter ICs

UNIT-V:

Semiconductor memories and Programmable logic devices.:

Memory organization and operation, expanding memory size, classification and characteristics of memories, sequential memory, read only memory (ROM), read and write memory(RAM), content addressable memory (CAM), commonly used memory chips, ROM as a PLD, Programmable logic array, Programmable array logic.

Learning Resources:

1. Morris Mano M., Digital Design, Prentice Hall of India, Second Edition, 1994.
2. ZviKohavi, Switching and Finite Automata Theory, Tata McGraw Hill, Second Edition, 1991
3. Tocci&Widmer_Digital Systems-Pearson Education-Eight Editiion, 2003.

4. Donald Pleach/Albert Paul Malvino/ GoutamSaha :Digital Principles and Applications" MCGraw-Hill, 2006.
5. B. Somnath Nair, Digital Elctronics and Logic Design, Prentice Hall, India, 2002
6. R. P. Jain, "Modern Digital Electronics", McGraw Hill Education, 2009.
7. A. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India, 2016.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Measurements & Instrumentation

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U19PC420EE
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
Enable the student to Have a fair knowledge about the fundamentals of construction & working principles of Analogue Ammeters, Voltmeters, Watt meters, Energy meters, power factor meters and frequency meters. Learn the measurements of circuit elements R, L & C using bridges, construction & working principle and applications of DC & AC potentiometers, CTs &PTs. Learn the fundamentals of Transducers & Strain Gauges.	1. Identify and choose the proper type and range of meter to measure current / voltage /Power. 2. Measure and calculate the Energy ina 1-ph/3-ph system of balanced/unbalanced. 3. Calculate the R, L & C values using the appropriate bridges. 4. Calibrate ammeter/ voltmeter/ wattmeter using the Potentiometer 5. Identify and choose the proper type of Transducer or strain gauge for measurement of Nonelectrical quantities.

UNIT -I

Principles of Measurement and Instrumentation: Basic characteristics of measuring instruments - accuracy, precision and uncertainty, sources of measurement error.

Instruments: Ammeter and Voltmeter, Expression for torque of moving coil, moving iron, dynamometer and electrostatic instruments. Extension of range of instruments, wattmeter, torque expression for dynamometer instruments. Active & Reactive power measurement.

UNIT –II

Energy meters – single phase and poly phase, driving torque and braking torque equations, Errors and testing compensation, maximum demand indicator, Single phase & 3 – phase electro dynamo meter power factor meter, frequency meter – electrical resonance, Use of Oscilloscope in

frequency (Lissajous Patterns), phase and amplitude measurements and Weston type of synchoroscope.

UNIT -III

Measurement of inductance, capacitance and resistance using Bridges: Wheat stone bridge, Kelvin Double Bridge, Loss of charge method, Megger, wagner'sEarthing device, Maxwell's Inductance bridge, Hay's bridge, Anderson's bridge, Desauty's bridge, schering bridge and Heaviside mutual Inductance bridge.

UNIT -IV

Potentiometers and Instrument Transformers: Standard cell and standard resistance, Crompton's DC and AC polar and coordinate type Potentiometer & Applications – Measurement of impedance, Calibration of ammeter, voltmeter and wattmeter. Instrument transformers – C.T. & P.TS Ratio and phase angle errors.

UNIT -V

Measurement of Non – Electrical quantities: Measurement of Linear displacement – Linear Potentiometers, Linear-motion variable inductors. Transducers: Proximity Inductive Transducers, LVDT, Optical Encoders and Capacitive Transducers, Measurement of angular velocity – Inductive Tachometer, DC & AC Tacho-generators. Strain Gauge: Basic construction of Bonded strain Gauge and Unbonded Strain Gauge.

Learning Resources:

1. A.K. Sawhney, A course in Electrical and Electronics Measurements and Instruments- DhanpatRAi and Sons, Delhi,2005
2. UmeshSinha, Electrical and Electronics Measurements and Instruments, SatyaPrakashan
3. F.W.Golding and Widdis, Electrical and Electronics Measurements and Instruments 5thEdition-2010

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Machines - I

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):2:1:0	SEE Marks: 60	Course Code: U19PC430EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
To study the concepts of magnetic circuits, principles, performances and applications of electromechanical energy conversion devices like D.C machines and Transformers which are used in many industries	1. Analyse the concepts of magnetic circuits 2. Evaluate the stored and converted energy and also exerted force in electromechanical energy conversion devices. 3. Identify and analyse the operation of dc machines 4. Analyse the differences in operation of different dc machine configurations.. 5. Analyse single phase and three phase transformers circuits.

UNIT –I

Magnetic fields and magnetic circuits

Review of magnetic circuits - MMF, flux, reluctance, inductance; review of Ampere Law and BiotSavart Law; Visualization of magnetic fields produced by a bar magnet and a current carrying coil - through air and through a combination of iron and air; influence of highly permeable materials on the magnetic flux lines.

UNIT –II

Electromagnetic force and torque:

B-H curve of magnetic materials; linear and nonlinear magnetic circuits; Energy in magnetic system, Field energy and mechanical force, Direction of mechanical force developed, Flow of energy in electro-mechanical devices, singly excited and multiply excited systems

UNIT –III

DC Machines:

Basic construction of a DC machine, magnetic structure - stator yoke, stator poles, pole-faces or shoes, air gap and armature core, Armature windings- Simple lap and wave windings, Brush position, Classification of DC Machines.

DC Generators:

Generated EMF, Types of field excitations – separately excited, shunt, series and compound, voltage build-up in a shunt generator, critical field resistance and critical speed, Internal and External characteristics, Armature reaction, Theory of commutation, compensating windings, inter poles, parallel operation.

UNIT –IV

DC Motors:

Generation of electromagnetic torque, torque-speed characteristics of separately excited, shunt and series motors. Application of motors, Starting and speed control methods of DC motors. Testing of DC Motors, Losses and efficiency, Swinburne's test, Hopkinson's test, Field test for series motors, Retardation test, Separation of losses.

UNIT –V

Transformers:

Constructional features, Principle of operation, Ideal transformer, Transformer on 'No load' and 'On load', Vector diagram, Equivalent circuit, Polarity test, O.C & S.C tests, Sumpner's test, Regulation & efficiency, All day efficiency, Separation of losses, Parallel Operation, Auto Transformer, Tap Changing Transformers: Concept of tap changing, on-load and off-load tap changers. Excitation phenomena of Transformers.

Three Phase Transformers:

Three phase transformers connections Y-Y, Δ- Δ, Δ-Y, Y-Δ, V-V and Scott connections, Tertiary winding.

Learning Resources:

1. Dr. P.S. Bhimbra, Electrical machinery, 7th edition (2011), Khanna Publications, Delhi

2. Fitzgerald, Kingsley, Umans, Electric Machinery, 6th edition (2002), Tata McGraw Hill Publications New Delhi

3. D.P Kothari and I.J Nagrath, Electrical Machines, 1st edition (2006), Tata McGraw Hill Publications, Sigma series, New Delhi
4. Dr. P.S. Bhimbra, Generalized Electrical Machines, 5th edition (1991), Khanna Publications, Delhi
5. J. B Gupta, Theory and performance of electrical machines, 15th edition (2015), S. K. Kataria& Sons publications, New Delhi
6. A. E. Clayton and N. N. Hancock, "Performance and design of DC machines", CBS
Publishers, 2004.
7. M. G. Say, "Performance and design of AC machines", CBS Publishers, 2002.
8. H. Cotton, Electrical Technology, 7th edition (2005), CBS publishers, New Delhi
9. Stephen. J. Chapman: Electric Machinery Fundamentals, 4th edition (2005), McGraw Hill, Singapore
10. John Hindmarsh, Electric Machines and their Applications, Pergamon Press, London, 1977.
11. http://www.nptelvideos.in/2012/11/electrical-machines-i.html
12.http://ieeexplore.ieee.org/search/searchresult.jsp?queryText=Electrical%20Machinery&newsearch=true

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING

Electronics Engineering Lab-II

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U19ES411EC
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
To develop an understanding of the underlying concepts of analog electronic circuits including feedback amplifiers, power amplifiers & oscillators, and design linear wave shaping and non-linear wave shaping circuits.	1. Build a multi stage amplifier and find the frequency response of amplifier. 2. Analyze the small signal amplifiers behavior with and without feedback. 3. Design and verify the functioning of various sinusoidal oscillators. 4. Design & Analyze RC Low pass and High pass Circuits for different time constants for various non-sinusoidal inputs. 5. Design different types of clippers and clampers 6. Examine the characteristics of a difference amplifier.

CYCLE - I Experiments

1. Frequency response of Two stage amplifier
2. Frequency response of Voltage series feedback amplifier
3. Frequency response of Voltage Shunt feedback amplifier
4. Frequency response of Current series feedback amplifier
5. Frequency response of Current Shunt feedback amplifier
6. Design of Hartley Oscillator
7. Design of Colpitt's Oscillator

CYCLE - II Experiments

8. Design of RC Phase Shift
9. Transformer coupled Class A power amplifier
10. Class B Power amplifier
11. Linear wave shaping-Integrator & Differentiator
12. Clipping circuits
13. Clamping Circuits

New Experiments

1. OP-Amp Applications(Adder,Subtractor,Comparator)
2. OP-Amp Applications(Integrator & Differentiator)

Mini Project(s)

Designing of various applications using devices.

Learning Resources:

1 Paul B. Zbar, Albert P. Malvino, Michael A. Miller, "Basic Electronics, A Text – Lab Manual", 7thEdition, TMH 2001.

2. Paul B. Zbar, Industrial Electronics,A Text-Lab Manual, 3rd Edition, TMH 1990.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: **3 Hours**			

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Measurements and Instrumentation Lab

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U19PC421EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
Enable the student To learn the construction, working, calibration and applications of different types of Analog instruments – Ammeter, Voltmeters, Wattmeter, Energy meter, Potentiometers & Power factor meter and also have the fair knowledge of measurement of circuit elements R, L & C using bridges.	1. Identify and choose the proper type and range of meter to measure current, voltage, Power, Energy and Power factor. 2. Calibrate ammeter, voltmeter, Wattmeter and power factor meter using the Potentiometer. 3. Calculate the R, L & C values using the proper bridges. 4. Measure non-electrical quantity (displacement).

List of Experiments:

1. Measurement of low resistance by Kelvin's Double Bridge
2. Calibration of Single phase energy meter by Phantom Loading
3. Measurement of Inductance by Anderson's Bridge
4. Measurement of capacitance by DeSautry's bridge
5. Use of D.C Potentiometer for measurement of unknown voltage and impedance
6. Calibration of 3-phase Energy meter (Electromagnetic/static) by direct loading.
7. Calibration of Power Factor meter.
8. Measurements of 3 phase reactive power using single phase wattmeter.
9. Calibration of LPF meter by phantom loading.

10. Measurement of R,L,C& Q at 1KHz and 100 KHz frequency of supply by using LCR meter.
11. Characteristics of LVDT.
12. Experiment with the strain-gauge.

From the above experiments, each student should perform at least 10 (Ten) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: **3 Hours**			

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Machines - I Lab

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U19PC431EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
To expose the students to practical experiments of DC machines and single-phase and three-phase transformers.	1. Test the performance of various DC generators. 2. Test the performance of various DC motors. 3. Test the performance of single phase transformers. 4. Test the performance of a 3-phase transformer 5. Identify various connection of 3-phase transformer.

List of Experiments:

1. Magnetization characteristics of a self excited D.C. generator
2. Load characteristics of D.C Shunt Generator
3. Load characteristics of D.C Compound generator
4. Performance characteristics of a DC shunt motor
5. Performance characteristics of D.C Compound motor
6. Performance characteristics of D.C Series motor
7. Retardation Test, Dynamic Braking of DC Shunt Motor
8. Speed control and Swinburn's Test on DC shunt motor
9. Open circuit and short circuit test on a 1-phase transformer
10. Separation of core losses in a Single Phase transformer
11. Sumpner's test on two identical transformers
12. Estimation of efficiency of DC Machine by Hopkinson test.

13. Three phase to Two phase conversion (Scott Connection)
14. Heat run test on Three phase transformer.
15. Polarity Test and estimation of self and mutual inductance of a 1-phase transformer

From the above experiments, each student should perform at least 10 (Ten) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: **3 Hours**			

With effect from the Academic Year 2020-21

OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN B.E. IV SEMESTER (2020-21)

Dept	Title	Code	credits
Civil	Disaster Management	U19OE410CE	3
CSE	Introduction To Data Structures	U190E410CS	3
CSE	Introduction To Software Engineering	U190E420CS	3
ECE	Mathematical Programming for Engineers	U19OE410EC	3
ECE	Introduction to Communication Systems	U19OE420EC	3
IT	Introduction to Object Oriented Programming	U19OE410IT	3
IT	Introduction to Scripting Languages	U19OE420IT	3
Mech.	Optimization Methods	U19OE410ME	3
HSS	Critical Thinking	U19OE410EH	3

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF CIVIL ENGINEERING

DISASTER MANAGEMENT (Open Elective-II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19OE410CE**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES Objectives of this course are to:	**COURSE OUTCOMES** Upon the completion of this course the students will be expected to:
1. Know about the state of art of disaster management in world and explore the history of the disasters and comprehend how past events have helped shape the future. 2. Study the various natural and manmade disasters and apply the mitigation measures 3. Expose students to various technologies used for disaster mitigation and management.	1. Attain knowledge on various types, stages, phases in disaster with international & national policies and programmes with reference to the disaster reduction. 2. Understand various types of natural disaster, their occurrence, Effects, Mitigation and Management Systems in India 3. Understand different types of manmade disasters, their occurrence, Effects, Mitigation and Management Systems in India. 4. Explain the utility of geography information systems (GIS), Remote sensing technology in all phases of disaster mitigation and management. 5. Understand the Role of Remote Sensing and Geographical Information Systems (GIS) in Disaster Management

UNIT-I

Introduction: Hazard, vulnerability and risk, Types of disasters, Disaster management cycle, Progress of disaster management in world, vulnerability profile of India, Disaster management act, Disaster management in India

UNIT-II

Natural Disasters – Hydro- meteorological based disasters: Tropical cyclones, floods, drought and desertification zones - Causes, Types, effects and Mitigation measures.

UNIT-III

Natural Disasters – Geographical based disasters: Earthquake, Tsunamis, Landslides and avalanches – Causes, Types, effects and Mitigation measures.

UNIT-IV

Human induced hazards: Chemical industrial hazards, major power breakdowns, traffic accidents, etc.

UNIT-V

Role of Remote Sensing and Geographical Information Systems (GIS) in Disaster Management: Introduction to remote sensing and GIS, its applications in disaster management.

Suggested Books:

1. Rajib, S and Krishna Murthy, R.R.(2012) "Disaster Management Global Challenges and Local Solutions", Universities Press, Hyderabad, 2012.
2. Navele, P & Raja, C.K. (2009), Earth and Atmospheric Disasters Management, Natural and Manmade, B.S. Publications, Hyderabad, 2009.
3. Battacharya, T. Disaster Science and Management, Tata McGraw Hill Company, New Delhi, 2012.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1.	No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
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3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

Department of Computer Science & Engineering

INTRODUCTION TO DATA STRUCTURES (OPEN ELECTIVE-II)

SYLLABUS FOR B.E. IV-SEMESTER
(COMMON FOR CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U190E410CS**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Identify and use appropriate data structure for a given problem. 2. Describe the linear and nonlinear data structures.	1. Implement linear data structures 2. Develop an application using stacks and queues. 3. Choose the appropriate nonlinear data structure and perform various operations on trees. 4. Perform various operations on graphs. 5. Analyze the time and space complexities of Algorithms.

UNIT – I:

Arrays: Arrays - ADT, Polynomials, Sparse matrices,

Linked Lists: Singly Linked Lists, Circularly linked lists, Doubly Linked Lists.

UNIT – II :

Stacks: Array Representation, Linked Representation, Applications**.**

Queues: Array Representation, Linked Representation, Applications.

UNIT – III: Introduction to non linear Data Structures: Tree Definitions and Properties, Representations of Binary Trees, Operations, Binary Tree Traversal

UNIT-IV: Graphs: Graph Definitions, properties and representations, Elementary Graph operations, Minimum Cost Spanning Trees- Kruskal's Algorithm, Prim's Algorithm.

UNIT-V: Performance analysis- time complexity and space complexity, Asymptotic Notation-Big O, Omega and Theta notations

Learning Resources:

1. Horowitz E, Sahni S and Susan Anderson-Freed, Fundamentals of Data structures in C, 2nd Edition(2008), Universities Press
2. Mark A Weiss, Data Structures and Algorithm Analysis In C, Second Edition(2002), Pearson
3. Kushwaha D. S and Misra A.K, Data structures A Programming Approach with C, Second Edition(2014), PHI.,
4. Gilberg R. F and Forouzan B. A, Data structures: A Pseudocode Approach with C, Second Edition(2007), Cengage Leaming
5. Tanenbaum A. M , Langsam Y. Augenstein M. J, Data Structures using C, Second Edition (2008), Pearson.
6. Thomas H. Cormen, Charles E. Leiserson, Ronald L Rivest, Clifford Stein, Introduction to Algorithms, Third Edition(2009), MIT Press
7. Yedidyah Langsam , Moshe J. Augenstein ,Aaron M. Tenenbaum, Data Structures Using C and C++ , Second Edition(2009), PHI
8. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-006-introduction-to-algorithms-fall-2011/lecture-videos
9. http://nptel.ac.in/courses/106106127/
10. http://www.nptel.ac.in/courses/106102064

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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3.	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

Department of Computer Science & Engineering

INTRODUCTION TO SOFTWARE ENGINEERING (OPEN ELECTIVE-II)

SYLLABUS FOR B.E. IV-SEMESTER

(COMMON FOR CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U190E420CS**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. understand the concepts involved in the lifecycle of software development 2. learn the best practices to be employed for the design, and testing of a software project.	1. Explain the software development lifecycle models for software system development. 2. Learn the requirement process steps in software process model. 3. Analyze the structural design models in object oriented system. 4. Analyze the behavioral design models used in object oriented system. 5. Identify verification and validation methods in a software engineering project at various phases of SDLC.

UNIT-I:

Introduction to Software Engineering:

A generic view of Process: Software Engineering, Process Framework, CMMI, Process Patterns, Process Assessment.

Process Models: Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, The Unified Process.

An Agile view of Process: What is an Agile Process, Agile Process Models- SCRUM, XP.

UNIT-II: Requirements Engineering: A bridge to Design and Construction, Requirements Engineering Tasks, Initiating Requirements Engineering Process, Eliciting Requirements, Negotiating Requirements, Validating Requirements.

UNIT-III:
Object oriented Modeling & design using UML: Introduction to UML.

Structural Modeling: Classes and Advanced Classes, Relationships ,Common Mechanisms, Class Diagrams, Interfaces, Types and Roles.

UNIT-IV:
Behavioural Modelling: Interactions, Interaction diagrams, Use Cases, Use Case Diagrams, Activity diagrams, State Machines, State chart Diagrams.

Architectural Modelling: Artifacts, Artifact diagrams, Deployment diagrams.

UNIT-V:
Testing Strategies: A Strategic approach to software testing ,Strategic issues, Test strategies for Conventional software, O-O Software, Validation testing, System testing, the art of debugging.

Testing Tactics: Software testing fundamentals, Black box and White box testing, Basis path testing, Control Structure, O-O testing methods, Testing for specialized environments, architectures and Applications testing patterns.

Learning Resources:

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, 6th Edition (2005), Tata McGrawHill.
2. Grady Booch, James Rumbagu, Ivor Jacobson, The Unified Modeling Language-User guide, (Covering UML 2.0) ,2nd Edition Pearson Education, India 2007.
3. Pankaj Jalote, An Integrated Approach to Software Engineering, 3rd Edition (2005), Narosa Publishing House.

4. http://nptel.ac.in/courses/106101061/
5. http://istqbexamcertification.com/what-is-a-software-testing/
6. http://agile.csc.ncsu.edu/SEMaterials/UMLOverview.pdf

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Mathematical Programming for Engineers (OPEN ELECTIVE - II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19OE410EC**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
To provide fundamental knowledge of programming language for solving problems.	1. Generate arrays and matrices for numerical problems solving. 2. Represent data and solution in graphical display. 3. Write scripts and functions to easily execute series of tasks in problem solving. 4. Use arrays, matrices and functions in Engineering applications 5. Design GUI for basic mathematical applications.

UNIT - I : Introduction:

Basics of MATLAB, MATLAB windows, Advantages of MATLAB,on-line help, file types.

MATLAB Basics: Variables and Constants –Vectors and Matrices- Arrays - manipulation- Built-in MATLAB Functions. Creating and printing simple plots, Creating ,Saving and Executing a Script File, Creating and Executing a function file.

Programming Basics: Data types-Operators – Hierarchy of operations, Relational and logical operators, if-end structure, if-else-end structure, if-elseif-else-end structure, switch-case statement, for-end loop, while-end loop, break and continue commands

UNIT - II : Scripts and Functions

Script Files, Function Files, Debugging methods in MATLAB.

Graphics: Basic 2D plots: Printing labels- grid and axes box- Entering text in a box- Axis control-Style options-Multiple plots-subplots-specialized 2D plots: stem-,bar, hist, pi, stairs, loglog , semilog ,polar ,comet 3D plots: Mesh,Contour,Surf,Stem3,ezplot.

UNIT - III : Numerical Methods Using MATLAB

Numerical Differentiation, Numerical integration- Newton-Cotes integration formulae, Multi-step application of Trapezoidal rule, Simpson's 1/3 Rule for Numerical Integration. MATLAB functions for integration.

Linear Equations- Linear algebra in MATLAB, Solving a linear system, Gauss Elimination, Finding eigen values and eigen vectors, Matrix factorizations, Advanced topics.

UNIT - IV : Nonlinear Equations

System of Non-linear equations, Solving System of Equations Using MATLAB function fsolve, Interpolation-Lagrange Interpolation, Two dimensional Interpolation, Straight line fit using Least Square Method, Curve fitting using built-in functions ployval and polyfit , cubic fit using least square method. Finding roots of a polynomial -roots function, Newton-Raphson Method

UNIT - V :

Solution of Ordinary differential Equations(ODEs)-The 4^{th} order Runge-kutta Method, ODE Solvers in MATLAB,Solving First –order equations using ODE23 and ODE45.

Structures and Graphical user interface(GUI): Advanced data Objects, How a GUI works, Creating and displaying a GUI. GUI components, Dialog Boxes.

Learning Resources:

1. Getting started with MATLAB "A quick introduction for scientist and engineers by RudraPratap, Oxford publications.
2. Advanced Guide to MATLAB-Practical Examples in Science and Enginneringby S.N.Alam,S.Islam,S.K.Patel-I.K.International Publishing House Pvt.Ltd.
3. Stephen J. Chapman-"MATLAB Programming for Engineers"- 5th Edition-Cengage Learning- 2015. Getting started with MATLAB (Version 9) The Math works.
4. An Introduction to MATLAB® Programming and Numerical Methods for Engineers 1st Edition by Timmy Siauw Alexandre Bayen, Elsevier-18th April 2014.
5. https://nptel.ac.in/courses/103106118/2
6. https://www.udemy.com/numerical-methods/

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests	: 2	Max. Marks for each Internal Test	:	30
2. No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Introduction to Communication Systems (OPEN ELECTIVE - II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19OE420EC**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. Distinguish between Amplitude and Frequency modulation methods and their application in Communication Receivers 2. Explain why multiplexing methods are necessary in communications and compare FDM with TDM 3. Compare and contrast FSK and BPSK modulation schemes employed in digital data transmission 4. Draw the block diagrams of different types of communication systems and explain their operation	1. Identify the Radio frequency spectrum and the bands of different types of radio systems 2. Analyze the power, efficiency and transmission bandwidth of Amplitude and Frequency Modulated signals. 3. Convert the Radio frequency to Intermediate frequency and explain the operation of Super heterodyne Receiver. 4. Compare and contrast Frequency Division Multiplexing and Time Division Multiplexing used in the Communication systems 5. Detect and correct errors present in bit stream data using parity check 6. Explain the basic principles of different types of communication systems.

UNIT - I :

Introduction to Electronic Communication: Communication systems, Types of Electronic Communication, Modulation and Multiplexing, The Electromagnetic Spectrum, Bandwidth, Communication Applications, Gain and Attenuation definitions

Amplitude Modulation Fundamentals: AM concepts, Modulation Index and Percentage of Modulation, Sidebands and the Frequency Domain, AM Power

UNIT - II :

Fundamentals of Frequency Modulation: Basic principles of Frequency Modulation, Principles of Phase Modulation, Modulation Index and Sidebands, Noise – Suppression Effects of FM, Frequency Modulation verses Amplitude Modulation.

Communication Receivers: Basic Principles of Signal Reproduction, Superheterodyne Receivers, Frequency Conversion, Intermediate Frequency and Images, Noise.

UNIT - III :

Digital Communication Techniques: Digital Transmission of Data, Parallel and Serial Transmission, Data Conversion, Pulse Modulation.

Multiplexing and De-multiplexing: Multiplexing Principles, Frequency Division Multiplexing, Time Division Multiplexing, PCM Multiplexing.

UNIT - IV :

Transmission of Binary Data in Communication Systems: Digital Codes, Principles of Digital Transmission, Transmission Efficiency, Modem Concepts and Methods – FSK, BPSK, Error Detection and Correction

UNIT - V :

Different Types of Communication Systems: Microwave Concepts, Optical Principles, Optical Communication System, Satellite Communication Systems, Satellite Orbits, Cellular Telephone Systems, Bluetooth and Wi-Fi basics

Learning Resources:

1. Louis E. Frenzel, Principles of Electronic Communication Systems, 3rd Edition. Tata Mcgraw Hill.
2. Wayne Tomasi, Electronic Communications Systems, 5th Edition, Pearson Education.
3. https://nptel.ac.in/syllabus/syllabus.php?subjectId=117102059
4. https://nptel.ac.in/courses/117101051/12

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

INTRODUCTION TO OBJECT ORIENTED PROGRAMMING

(Open Elective-II) (Common for CIVIL, ECE, EEE & MECH)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19OE410IT**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
Explain the fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, building simple GUI applications.	1. Understand fundamental concepts in Object oriented approach. 2. Develop object-oriented programs using the concepts of exception handling and multi threading. 3. Demonstrate the usage of Java I/O streams to handle user input and output. 4. Design and develop GUI programs. 5. Develop Applets for web applications.

UNIT- I

Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables-scope and lifetime, Operators, Control statements, Structure of a Java class, Classes, Methods, Inheritance, and Command Line Arguments.

Arrays: One-dimensional arrays, creating an array, declaration of arrays, initialization of arrays, two-dimensional arrays.

Packages: Creation, importing a package and user defined package.

Interfaces: Defining interfaces, extending interfaces, implementing interfaces.

UNIT- II

Exception Handling: Introduction, types of exceptions, syntax of exception handling code, multiple catch statements, using finally statement, user-defined exceptions.

UNIT- III

Basic I/O Streams: Java I/O classes and interfaces, Files, Stream and Byte classes, Character Streams, Serialization.

Exploring java.lang: Object, Wrapper classes, String, StringBuffer, System

UNIT- IV

Introducing AWT working with Graphics: AWT Classes, Working with Graphics.

Event Handling: The Delegation Event Model, Event Classes, Source of Events, Event Listener Interfaces.

Awt Controls: Control Fundamentals, Labels, Using Buttons, Applying Check Boxes, CheckboxGroup, Choice Controls, Using Lists, Managing Scroll Bars, Using TextField, Using TextArea, Understanding Layout Managers, Menu bars and Menus, Dialog Boxes, FileDialog, Exploring the controls, Menus ,and Layout Managers.

UNIT- V

Applet Programming: Introduction, how applets differ from applications, building applet code, applet life cycle, HTML-APPLET tag, passing parameters to applets.

Learning Resources:

1. Herbert Schildt, The Complete Reference Java, 7th Edition, Tata McGraw Hill, 2006.
2. James M Slack, Programming and Problem solving with JAVA, Thomson Learning, 2002.
3. C Thomas Wu, An Introduction to Object Oriented Programming with Java 5th edition, McGraw Hill Publishing, 2010.
4. Y. Daniel Liang , An Introduction to JAVA Programming, Tata McGraw Hill, 2009.
5. Kathy Sierra, Head First Java, 2/e, Shroff Publishers, 2012.
6. https://docs.oracle.com/javase/tutorial/
7. https://nptel.ac.in/courses/106105191/

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

INTRODUCTION TO SCRIPTING LANGUAGES

(Open Elective-II) (Common for CIVIL, ECE, EEE & MECH)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19OE420IT**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
This course will enable the students to acquire basic skills for writing python scripts.	1. Write a python script to solve a basic problem using structured programming constructs 2. Write a python script to solve a basic problem using object oriented programming constructs 3. Create and use python modules 4. Handle file related operations 5. Encode and decode strings

Unit – I

Introduction to Python, running a python script, writing comments, using variables, operators, strings and text, format specifiers , printing information. passing command line arguments, prompting users, parameters, unpacking variables.

Unit – II

Decision making : if and else if, repetition : while loops and for loops, lists, operations on list , tuples, operations on tuples, sets, operations on sets, dictionaries, operations on dictionaries.

Unit – III

Defining functions, passing arguments to functions , returning values from functions, Exception handling.

Unit – IV

Modules , Classes and Objects, is – a relationship : inheritance, has-a relationship : composition.

Unit – V

File handling, serialization using JSON and pickle, encoding and decoding.

Learning Resources

1. Allen B. Downey, Think Python, 2nd Edition, Green Tea Press
2. "Learning Python", 5th Edition, O'reilly
3. https://www.python.org
4. https://nptel.ac.in/courses/106106182/

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING

OPTIMIZATION METHODS (Open Elective-II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19OE410ME**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The objectives of this course are to:	**COURSE OUTCOMES** On completion of the course, students will be able to
understand Linear & non-linear programming, transportation modeling , CPM & PERT for project scheduling and control, and application of various optimization techniques for respective field engineering (Inter disciplinary)	1. Optimization of resources in multi disciplinary areas through linear programming under different conditions. 2. Sensitivity analysis of a linear programming problem as per customer requirements to suit various Organizations. 3. Minimization of total cost to apply for transportation techniques for the transhipment of Goods and products and Implement techniques like project management to analyze about material management. 4. Optimization of resources in multi disciplinary areas through non-linear programming under different conditions.

UNIT-I

Optimization-An overview

Meaning of Optimization-Origin of Optimization-Introduction to Linear programming problems (LPP) -Formulation of LPP- Graphical method, simplex method.

UNIT-II

Advanced topics in Linear programming

Duality in LPP, Differences between primal and dual, shadow prices, Dual simplex method, sensitivity analysis. special cases in LPP.

UNIT-III

Transportation Model

Definition of the transportation model-matrix of Transportation model-Formulation and solution of transportation models- Methods for calculating Initial basic feasible solution-Optimization of transportation model using MODI method.

Project Scheduling

Introduction to network analysis, Rules to draw network diagram, Fulkerson rule for numbering events, Critical path method, PERT.

UNIT-IV

Non linear programming problems

Optimization methods for single variable, multivariable functions, Maxima-Minima

One Dimensional Minimization: Uni-modal Function, Unrestricted search, Exhaustive search,Dichtomous search, Interval Halving method, Fibonacci and golden bisection Method , Newton and Quasi Newton method.

UNIT-V

Non Linear - Unconstrained optimization: classification, scaling of design variables, Random search methods, Univeriate search, pattern Directions, Hook Jeeves, Powel method, Rosenbrock method.

Learning Resources:

1. SingiresuS.Rao, “Engineering optimization- Theory and Practice”, 4thEdition, John Wiley and Sons, 2009.
2. NVS Raju, “Optimization methods for Engineers ", PHI Learning Pvt. Ltd., 2014.

3. Prem Kumar Gupta and Dr. DS Hira, “Operations Research ", S.Chand& Company Pvt. Ltd., 2014.
4. R. Paneerselvam, “Operations Research”, PHI Learning Pvt Ltd., 2009.
5. Kalyanmoy Deb, Optimization for Engineering Design- algorithms and examples, PHI pvt ltd, 1st edition 2003, Delhi.

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With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderbad-500031, Telangana State

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

CRITICAL THINKING (Open Elective-II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: **U19OE410EH**
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES The objectives of this course are to:	**COURSE OUTCOMES** On completion of the course, students will be able to
To help students: • Identify the core skills associated with critical thinking. • Comprehend the various techniques of critical thinking. • **Understand where to** look for bias and assumptions in problem analysis • Understand Structure, standards, and ethics of critical thinking **Dents will learn** • How to control and evaluate their thought processes • How to reason effectively and consistently • Problem analysis best practises using their decision time most effectively	• Analyse and use techniques for comparing alternative solutions • Demonstrate the difference between deductive and inductive reasoning. • Construct a logically sound and well-reasoned argument. • Evaluate, identify, and distinguish between relevant and irrelevant information • Formulate a thesis or Hypothesis • Employing Evidence/Information Effectively

UNIT I - Components of Critical Thinking

1. Applying Reason
2. Open Mindedness
3. Analysis
4. Logic

UNIT II - Non-Linear Thinking

1. Step Out of Your Comfort Zone
2. Don't Jump to Conclusions
3. Expect and Initiate Change
4. Being Ready to Adapt

UNIT III - Logical Thinking

1. Ask the Right Questions
2. Organize the Data
3. Evaluate the Information
4. Draw Conclusions

UNIT IV - Evaluate Information

1. Making Assumptions
2. Watch out for Bias
3. Ask Clarifying Questions
4. SWOT Analysis

UNIT-V - Problem Solving

1. Identify Inconsistencies
2. Trust Your Instincts
3. Asking Why?

METHODOLOGY:-
Case Studies
Demonstration
Presentations
Expert lectures

ASSESSMENT :-
Online assignments
Individual and Group

Writing and Audio-visual lessons

Learning Resources:-

1. Critical Thinking: A Beginner`s Guide to Critical Thinking, Better Decision Making, and Problem Solving-Jennifer Wilson
2. Wait, What? And Life`s Other Essential Questions – James E.Ryan
3. Think Smarter: Critical Thinking to Improve problem-solving and Decision Making skill -Michael Kallet
4. The Art of Thinking Clearly-Rolf Dobelli

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