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 2019-20 (For the batch admitted in 2018-19) (R-18)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
Phones: +91-40-23146030, 23146031
Fax: +91-40-23146090

I. Attendance and Sessional marks requirements:

1	B.E(4yrs)	**Attendance:** Minimum aggregate attendance required to eligible to attend semester end exams is 75% and 65% with Medical Condonation respectively.
		Sessional Marks: Minimum aggregate of sessional marks required to become eligible for appearing semester end examinations is 40%

II. Promotion rules for B.E(4ydc) course

S No	Semester/Class	Conditions to be fulfilled
1	I-SEM TO II- SEM	Regular course of study of I-SEM and 40% aggregate CIE marks in I-SEM
2	II-SEM TO III SEM	Regular course of study of II SEM and
		40% aggregate CIE marks in II-SEM
		Must have secured at least 50% of total credits prescribed for I and II SEMs together
3	III-SEM to IV-SEM	Regular course of study of III-SEM and
		40% aggregate CIE marks in III-SEM
4	IV-SEM to V-SEM	Regular course of study of IV SEM
		40% aggregate CIE marks in IV-SEM
		Passed in all the courses of I and II SEMs
		Must have secured at lest 50% of total credits prescribed for III and IV SEMs put together
5	V-SEM to VI-SEM	Regular course of study V-SEM 40% aggregate CIE marks in V-SEM
6	VI-SEM to VII-SEM	Regular course of study of VI SEM
		40% aggregate CIE marks in VI-SEM
		Passed in all the courses of III and IV SEMs
		Must have secured at least 50% of total credits prescribed for V and VI SEMs put

		together
7	VII-SEM to VIII-SEM	Regular course of study of VII SEM 40% aggregate CIE marks in VII SEM
8	Eligibility to appear VIII-SEM exams	Regular course of study of VIII SEM and 40% aggregate CIE marks in VIII-SEM

III. Promotion rules for B.E(3 YDC) course (Lateral Entry)

S No	Semester / Class	Conditions to be fulfilled
1	III-SEM to IV-SEM	Regular course of study of III-SEM and
		40% aggregate CIE marks in III-SEM
2	IV-SEM to V-SEM	Regular course of study of IV SEM
		40% aggregate CIE marks in IV-SEM
		Must have secured at lest 50% of total credits prescribed for III and IV SEMs put together
3	V-SEM to VI-SEM	Regular course of study V-SEM 40% aggregate CIE marks in V-SEM
4	VI-SEM to VII-SEM	Regular course of study of VI SEM
		40% aggregate CIE marks in VI-SEM
		Passed in all the courses of III and IV SEMs
		Must have secured at least 50% of total credits prescribed for V and VI SEMs put together
5	VII-SEM to VIII-SEM	Regular course of study of VII SEM 40% aggregate CIE marks in VII SEM
6	Eligibility to appear VIII-SEM exams	Regular course of study of VIII SEM and 40% aggregate CIE marks in VIII-SEM

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) :: IBRAHIMBAGH, HYDERABAD – 500 031.
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION (R-18) :: B.E. - EEE : THIRD SEMESTER (2019 - 20)

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								
U18HS330EH	Skill Development-I:Communications Skills in English	2	-	-	3	60	40	2
U18BS310MA	Partial Differential Equations and Transform Techniques	3	-	-	3	60	40	3
U18ES310EC	Electronics Engineering - I	2	1	-	3	60	40	3
U18PC310EE	Electrical Circuit Analysis	2	1	-	3	60	40	3
U18PC320EE	Electromagnetic Field Theory	2	1	-	3	60	40	3
U18OE3X0XX	Open Elective-I	2	-	-	3	60	40	2
U18MC310ME	Introduction to Entrepreneurship	1	-	-	2	40	30	-
PRACTICALS								
U18ES311EC	Electronics Engineering – I Lab	-	-	2	3	50	30	1
U18PC311EE	Circuits and Simulation Lab	-	-	2	3	50	30	1
	TOTAL	**14**	**03**	**4**		**500**	**330**	**18**
	GRAND TOTAL	**21**				**830**		**18**
Student should acquire one online certificate course during III- VIII Semester								

Note: Left over hours are allocated for Library/Sports/Proctorial Interaction/CC/TC/RC/CCA/ECA

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING
(Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Humanities and Social Sciences
Communication Skills in English-I

SKILL DEVELOPMENT COURSE: I

FOR BE 2/4-III SEMESTER (COMMON FOR ALL BRANCHES)

L:T:P(Hrs/Week):2:0:0	SEE Marks : 60	Course Code: **U18HS330EH**
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

Students are given workbooks prepared by Talent sprint.

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 Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mathematics
Partial Differential Equations and Transform Techniques

SYLLABUS FOR B.E - III-SEMESTER
(Civil, EEE & Mechanical Branches)

L:T:P(Hrs./week):3:0:0	SEE Marks :60	Course Code : **U18BS310MA**
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	1. Expand any function which is continuous, Discontinuous, even or odd in terms of its Fourier series.
2. Formulate and understand linear and nonlinear partial differential equations.	2.Formulate the Partial differential equations by eliminating arbitrary constants and functions and solve linear, non linear 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.	3.Solve the one dimensional wave(Vibrations of a string), heat equations and two dimensional heat equations.
5. Study the concept of Fourier and inverse Fourier Transform of a function and various properties.	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: 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: 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: Fourier Transforms:
Fourier Integral Theorem (without Proof) - Fourier Transforms – Inverse Fourier Transform - Properties of Fourier Transform –Fourier Cosine & Sine Transforms.

UNIT-IV: 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: 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. 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. Advanced Engineering Mathematics, Kreyszig E, 8 th Edition, John Wiley & Sons Ltd, 2006.
4. A text book of Engineering Mathematics by N.P.Bali & Manish Goyal, Laxmi Publication.

5. **http://tutorial.math.lamar.edu/Classes/DE/DE.aspx**
6. **http://mathworld.wolfram.com/topics**
7. **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 Tests: 90 Minutes

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

Department of Electronics and Communication Engineering

Electronics Engineering – I

SYLLABUS FOR B.E. (EEE) III – SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: **U18ES310EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
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.	On completion of the course, students will be able to: 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
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 Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Electrical Circuit Analysis

SYLLABUS FOR B.E.III-SEMESTER

L:T:P(Hrs/week):2:1:0	SEE Marks:60	Course Code: **U18PC310EE**
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 provide knowledge on determining electrical quantities of electrical networks by network theorems. 2. Steady state and transient response of electrical circuits by dc and ac excitations. 3. Resonance, coupled circuits and two port network parameters.	1. Apply network theorems for the analysis of electrical circuits. 2. Obtain the transient and steady-state response of electrical circuits. 3. Analyse circuits in the sinusoidal steady-state (single-phase and three-phase). 4. Analyse two port circuit behavior. 5. Analyse the coupled circuits.

Unit I: Network Theorems:

Superposition theorem, Thevenin theorem, Norton theorem, Maximum power transfer theorem, Reciprocity theorem, Compensation theorem. Analysis with dependent current and voltage sources. Concept of duality and dual networks.

Unit II: Solution of First and Second order networks:

Solution of first and second order differential equations for Series and parallel R-L, R-C, RL-C circuits, initial and final conditions in network elements, forced and free response, time constants, steady state and transient state response.

Unit III: Sinusoidal steady state analysis:

Representation of sine function as rotating phasor, phasor diagrams, impedances and admittances, AC circuit analysis, effective or RMS values, average power and complex power. Three-phase circuits. series and parallel resonances.

Unit IV: Electrical Circuit Analysis Using Laplace Transforms and Coupled Circuits:

Review of Laplace Transform, Analysis of electrical circuits using Laplace Transform for standard inputs, convolution integral, transformed network with initial conditions. Transfer function representation. Poles and Zeros. Mutual coupled circuits, Dot Convention in coupled circuits, Ideal Transformer.

Unit V: Two Port Networks:

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

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Electromagnetic Field Theory

SYLLABUS FOR B.E.III-SEMESTER

L:T:P(Hrs/week):2:1:0	SEE Marks:60	Course Code: **U18PC320EE**
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 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). Vector calculus differentiation, partial differentiation, integration, vector operator del, gradient, divergence and curl; integral theorems of vectors. Conversion of a vector from one coordinate system to another.

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

UNIT II: Conductors, Dielectrics and Capacitance:

Current and current density, Ohms Law in Point form, Continuity of current, Boundary conditions of perfect dielectric materials. Electric dipole, Permittivity of dielectric materials, Electrostatic Energy and Energy density Capacitance, Capacitance of a two wire line, Poisson's equation, Laplace's equation, Solution of Laplace and Poisson's equation, Application of Laplace's and Poisson's equations.

UNIT III: Static Magnetic Fields:

Biot-Savart's Law, Ampere Law, Magnetic flux and magnetic flux density, Scalar and Vector Magnetic potentials. Steady magnetic fields produced by current carrying conductors.

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 and mutual inductances.

UNIT IV: Time Varying Fields and Maxwell's Equations:

Faraday's law for Electromagnetic induction, Displacement current, Point form of Maxwell's equation, Integral form of Maxwell's equations, Motional Electromotive forces.

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, 2014.
2. W. Hayt, "Engineering Electromagnetics", McGraw Hill Education, 2012
3. A. Pramanik, "Electromagnetism - Theory and applications", PHI Learning Pvt. Ltd, New Delhi, 2009.
4. A. Pramanik, "Electromagnetism-Problems with solution", Prentice Hall India, 2012.
5. MIT Open CourseWare http://ocw.mit.edu Electromagnetic Field Theory: A Problem Solving Approach

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

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: **U18MC310ME**
Credits : -	CIE Marks: 30	Duration of SEE: 2 Hours

COURSE OBJECTIVE	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of this course is to inspire students to develop entrepreneurial mind-set, provide the information about the facilities, schemes available to start enterprise 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 start-ups. 4. prepare a business plan report

UNIT-I: **ENTREPRENEURSHIP**
Entrepreneurial characteristics, Classification of Enterprises, Incorporation of Business, Forms of Business organizations, Role of Entrepreneurship in economic development, Start-ups.
Idea Generation and Opportunity Assessment: Ideas generation, 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, Other financial assistance.
Entrepreneurial skills, design thinking, selling and communication. Project Formulation and Appraisal, Preparation of Project Report, Content;

Guidelines for Report preparation, Project report and pitching

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:	01	Max.Marks for the Internal Test:	20
2	No. of Assignments:	01	Max. Marks for each Assignment:	05
3	No. of Quizzes:	01	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

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

Department of Electronics and Communication Engineering

Electronics Engineering – I Lab

SYLLABUS FOR B.E. (EEE) III - SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U18ES311EC**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
To develop an understanding of the characteristics of Electronic devices and circuits with Qualitative approach	On completion of the course, students will be able to: 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", 7thEdition, 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 day-to-day laboratory class work			18
Duration of Internal Test: **3 Hours**			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering
Circuits & Simulation Lab

SYLLABUS FOR B.E.III-SEMESTER

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: **U18PC311EE**
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 impart the Practical knowledge on Transients in RLC circuits, Frequency response of RLC circuits, Parameters of Two port network, Current locus of RL/RC circuits and circuit theorems.	1. Design the RLC circuits on the bread board and analyse their responses in Time as well as Frequency domain. 2. Calculate the Z, Y, ABCD & h – parameters of a given Network by applying suitable mathematical equations using the test readings. 3. Apply the concepts of theorems on AC/DC circuits and analyse. 4. Use software tools PSPICE, MATLAB & PSIM to simulate the given electrical circuits and compare the simulation results with practical results.

List of Experiments

1. Charging, discharging characteristics of RC series circuit.
2. Locus diagram of a RC/RL series circuit.
3. Frequency response of a RLC series circuit.
4. Z,Y & ABCD Parameters of Two Port Network.
5. Verification of Thevenin's & Norton's theorems.
6. Verification of Superposition Theorem & Maximum power transfer theorems.

7. Transient responses of RLC series circuit.
8. Characteristics of linear/Non – linear and Bilateral elements.
9. Simulation of Series and Parallel resonance.
10. Simulation of Transient responses of Series RLC, RL and RC circuits with sine & step input.
11. Simulation of Thevenin's & Norton's theorems.
12. Simulation of Superposition & Maximum power transfer theorems.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for day-to-day laboratory class work			18
Duration of Internal Test: **3 Hours**			

OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN B.E. III SEMESTER (2019-20)

Dept	Title	Code	credits
Civil	Green Buildings	U18OE310CE	2
CSE	Introduction to Python Programming	U180E310CS	2
CSE	Cyber Security	U180E320CS	2
ECE	Introduction to Signals & Systems	U18OE310EC	2
ECE	Introduction to Principles of Communication Engineering	U18OE320EC	2
ECE	Python Programming	U18OE330EC	2
IT	Fundamentals of Data Structures	U18OE310IT	2
IT	Introduction to Linux	U18OE320IT	2
Mech.	Geometric Modeling	U18OE310ME	2
Mech.	Mechanical Technology	U18OE320ME	2
Mech.	Basic Heat Transfer for Electronic Systems	U18OE330ME	2
Maths.	Basic of Cryptology	U18OE320MA	2
Physics	Smart Materials and Applications	U18OE310PH	2
Chemistry	Battery Science & Its Applications	U18OE310CH	2

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

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: **U18OE310CE**
Credits : 2	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	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 4. 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 the 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 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

INTRODUCTION TO PYTHON PROGRAMMING

(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: **U180E310CS**
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	1.Design python programs using arithmetic expressions and decision making statements
2.Learn programming and solve problems using Python language	2.Design modular python programs using functions
	3.Develop programs using strings and list
	4.Develop programs using tuples and dictionaries
	5.Illustrate operations on Efficient Binary Search Trees and Multiway Search Trees.

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 the 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)
IBRAHIMBAGH, HYDERABAD – 500 031

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 : **U180E320CS**
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 the 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)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTRODUCTION TO SIGNALS & SYSTEMS

(OPEN ELECTIVE-I)

SYLLABUS FOR B.E. III – SEMESTER

L:T:P (Hrs./week): 2:0:0	SEE Marks : 60	Course Code:**U18OE310EC**
Credits : 2	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Define and classify continuous and discrete time signals and systems. 2. Determine frequency domain characteristics of continuous and discrete time signals.	On completion of the course, students will be able to 1. Analyze basic signals and systems in continuous and discrete time domain 2. Apply the properties of different transformation techniques to analyze continuous time domain signals and systems in frequency domain 3. Determine the response of an LTI system using Convolution 4. Apply the properties of different transformation techniques to convert a discrete time domain signal to frequency domain

UNIT – I: Continuous time signals: types of signals, representation of signals, basic elementary signals, operations on signals.
Continuous time systems: classification of systems - static and dynamic, linear and non linear, time invariant and time variant.

UNIT – II: Continuous time Fourier transforms: Introduction, existence, properties, magnitude and phase spectrums.
Laplace transforms: Introduction, existence, Laplace transform of basic elementary signals, properties, inverse Laplace transforms.

UNIT – III: Discrete time signals: types of signals, representation of signals, basic elementary signals, operations on signals.
Discrete time systems: classification of systems - static and dynamic, linear and non linear, time invariant and time variant.

UNIT – IV: LTI Systems: Introduction to continuous and discrete time LTI systems, properties, impulse response, convolution, causality, stability, transfer function.
Z-transform: Introduction, existence, Z-transform of basic elementary signals, properties, inverse Z-transforms.
Applications: Basic network Analysis, Servo Motor

Learning Resources:

1. P. Ramakrishna Rao, Signals and Systems,McGraw Hill, 2008.
2. Alan V. Oppenheim, Alan S. Wilsky and S. Hamid Nawab, Signals and Systems, 2nd ed., PHI, 2009.
3. Nagoor kani , Signals and Systems McGraw Hill, 2013

4. https://onlinecourses.nptel.ac.in/noc19_ee07/preview

(Principle of Signals and Systems by Prof. Aditya K Jagannatham

5. https://www.edx.org/course/signals-and-systems-part-1-1
6. https://www.edx.org/course/signals-systems-part-2-iitbombayx-ee210-2x-3

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 Tests: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTRODUCTION TO PRINCIPLES OF COMMUNICATION ENGINEERING

(OPEN ELECTIVE-I)

SYLLABUS FOR B.E. III – SEMESTER

L:T:P (Hrs./week) : 2:0:0	SEE Marks : 60	Course Code: **U18OE320EC**
Credits : 2	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
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.	On completion of the course, students will be able to 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 Tests : 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 Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PYTHON PROGRAMMING

(OPEN ELECTIVE-I)

SYLLABUS FOR B.E. III – SEMESTER

L:T:P (Hrs./week) : 2:0:0	SEE Marks : 60	Course Code: **U18OE330EC**
Credits : 2	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Acquire problem solving skills 2. Learn programming and solve problems using Python language	On completion of the course, students will be able to 1. Develop Python programs with conditionals and loops 2. Design programs using functions, strings and lists 3. Construct Python data structures programs using tuples, dictionaries 4. Design programs using files, OOPS concept, regular expressions 5. To perform transactions using database

UNIT-I: Basics of Python Programming: Features of Python**,** variables and identifiers, operators and expressions.

Decision control Statements: Selection/Conditional branching statements, basic loop structures/iterative Statements, nested loops, break, continue, and pass Statements.

Functions and Modules: function definition, function call, more on defining functions, recursive functions, modules.

UNIT-II: Data Structures: **Strings:** Introduction, built-in string methods and functions, slice operation, String Module. Regular Expressions.

Lists : Introduction, nested list, cloning lists, basic list operations, list methods. Functional programming-filter(),map(),reduce() function.

Tuples : Introduction, basic tuple operations, tuple assignment, tuples for returning multiple values, nested tuples, tuple methods and functions.

Set: Introduction, Set operations.

UNIT – III: Dictionaries: Basic operations, sorting items, looping over dictionary, nested dictionaries, built-in dictionary functions.

Files and Exceptions: reading and writing files, pickling, handling exceptions. Built-in and user-defined exceptions.

OOPS Concepts: Introduction, classes and object, class method and self argument, the __init__()method, class variables and object variables, public and private data members, Inheritance, Operator Overloading.

UNIT – IV:Python Database Connectivity: Importing MySQL for Python**,** connecting with a database, Simple querying-forming a query in MySQL, Simple Insertion-forming a MySQL insertion statement.

Case Studies: Python Packages- Introduction to Numpy, Pandas, Scipy, Pillow, Tensorflow, Matplotlib, Bar charts, Histograms, Scatter plots, GUI programming-Tkinter.

Learning Resources:

1. Reema Thareja, "Python programming using problem solving approach ", Oxford university press.
2. Allen Downey, "Think Python: How to Think Like a Computer Scientist", O'Reilly publications,2nd Edition.
3. Albert Lukaszewski, "Mysql for python ", PACKT publishers
4. Mark Lutz, "Learning Python", O'Reilly Publications.
5. Stewart Venit and Elizabeth Drake, Prelude to Programming: Concepts and Design, 6th Edition (2015), Pearson India
6. Mark J Guzdial, Introduction to Computing and programming in Python, 3rd Edition (2013), Pearson India
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.scipylectures.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 Tests	: 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 Tests: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Information Technology

FUNDAMENTALS OF DATA STRUCTURES

(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: **U18OE310IT**
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 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.

UNIT – III: **Doubly linked list**:
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 Tests	: 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 Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

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 : **U18OE320IT**
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 Tests	: 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 Tests : 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

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: **U18OE310ME**
Credits :02	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVE	**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 Tests	: 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 Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MECHANICAL ENGINEERING

MECHANICAL TECHNOLOGY (Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: **U18OE320ME**
Credits :02	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVE	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of this course is to learn the basic principles of excavating equipment, conveying equipment hoisting equipment, concrete producing equipment and pneumatic equipment.	1 identify the operations of various earth moving equipments for maintenance and selection with respect to their applications.
	2 justify various conveying equipment for transporting material based on working principles.
	3 Explain the working principles of various types of hoisting equipment in civil engineering applications.
	4 examine various aggregate and concrete producing equipments used in concrete production and working of pneumatic equipment.

UNIT-I: EXCAVATING EQUIPMENT: General description, operation, maintenance and selection of Earth moving and Excavating Equipment: Shovels, Dragline, Clamshell, Cable excavator, Bucket wheel excavator, Tractor, Bulldozer, Scraper, Trenchers, Grader, Earth Compactors.

UNIT-II: CONVEYING EQUIPMENT: Belt conveyor, Screw Conveyor, Bucket Conveyor, Apron Conveyor and Aerial Ropeway.

UNIT-III: HOISTING EQUIPMENT: Hoist winch, Differential and Worm geared chain hoists, Fork lift trucks, Guyed and stiffly derricks, swing and non– swing mobile crane, whirler crane, Construction elevator, passenger lift and Bucket elevators.

UNIT-IV:AGGREGATE AND CONCRETE PRODUCING EQUIPMENT: Crushers – Jaw, Gyratory, Hammer and Roll Crushers, Screens – Stationary, Shaking and Vibrating screens. Concrete mixers and Concrete pumps.

Pneumatic Equipment: Reciprocating air– compressor, construction pneumatic tools; jack hammer, paving breaker, Rock drill, concrete vibrator.

Learning Resources:

1. R.L. Peurifoy, “Construction Planning Equipment and Methods”, 7th Edition, McGraw-Hill Publishers, 1956.
2. Mahesh Varma, “Construction Equipment and its planning and application”, Metropolitan books Co, Delhi, 2004

3. Goodes Spence, ”Building and Civil Engineering Plant”, Crosby Lock Wood, 1995.

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

1. No. of Internal Tests	: 2	Max. Marks for each Internal Tests	: 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 Tests : 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

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: **U18OE330ME**
Credits :2	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVE	**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 Tests	: 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 Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

DEPARTMENT OF MATHEMATICS

(Common to all branches except for CSE)

BASICS OF CRYPTOLOGY (OPEN ELECTIVE-I)

Syllabus for B.E III – sem

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: **U18OE320MA**
Credits :02	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	**At the end of the course students will be able to:**
1. **Study** fundamentals of number theory. 2. **Study** various methods under monoalphabetic substitution ciphers. *3.* **Understand** the methods under polyalphabetic substitution ciphers and public key cryptography. 4. **Study** Public key Cryptography and Cryptographic protocols and algorithms.	1. **Apply** the knowledge of Congruences for Modular exponentiation and solving Linear Congurences. 2. **Apply** the methods under monoalphabetic substitution ciphers to encipher and decipher. 3. **Apply** the methods under polyalphabetic substitution ciphers to encipher and decipher. 4. **Apply** the methods RSA Cryptosystem.

UNIT- I Number Theory:

Divisibility- Euclidean Algorithm – GCD using Euclidean Algorithm – Introduction to Congruences -Modular Arithmetic –Fast Modular Exponentiation-Linear Congruences.

UNIT- II Monoalphabetic Substitution Ciphers:

Introduction to Cryptology and Basic Terminology -Monoalphabetic Substitution Ciphers-The Additive (or shift) Cipher –The Multiplicative Cipher - The Affine Cipher.

UNIT –III Polyalphabetic Substitution Ciphers :
Polyalphabetic Substitution Ciphers - Integer Matrices - The Hill Digraph Cipher - The Hill Trigraph Cipher - The Vigenère Square Cipher – The Playfair Cipher -The Permutation Cipher – The Exponentiation cipher

UNIT –IV Public Key Cryptography :
Public Key Cryptography –RSA Cryptosystem- Knapsack Cipher.
Cryptographic Protocols & Applications – Diffie-Hellman Key Exchange.

Learning Resources:
Elementary Number Theory , Kenneth H. Rosen, Pearson India Education services Pvt.Ltd, 6th edition.

A Course in Number Theory and Cryptography by Neal Koblitz, Springer, New York.

1. https://onlinecourses.nptel.ac.in/noc16_cs21
2. www.mastermathmentor.com

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

1	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	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 Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF PHYSICS

Open elective Course

SMART MATERIALS AND APPLICATIONS

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: **U18OE310PH**
Credits :02	CIE Marks:40	Duration of SEE:03Hours

Course Objectives	Course Outcomes
The student 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	**At the end of the course, the student should at least be able:** 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 (8 hours)

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 (6 hours)

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 (8 hours)

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 (6 hours)

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. T W Duerig, K N Melton, D Stockel, C M 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 Tests	:	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 Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING
(Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Chemistry
BATTERY SCIENCE & ITS APPLICATIONS (OE)

SYLLABUS FOR B.E. III SEMESTER

L:T:P (Hrs./week):2:0:0	SEE Marks :60	Course Code :**U18OE310CH**
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 introduce the various terms to understand the efficiency of batteries.	1. Discuss the construction, electrochemistry, technology and applications of selected primary batteries.
2. To know the relevant materials required for the construction of primary and secondary batteries.	2. Discuss the construction, electrochemistry, technology and applications of few secondary batteries.
3. To familiarize with the reactions involved during charging and discharging processes.	3. Explain the working principle, electrochemistry, technology and applications of prominent fuel cells.
4. To focus on the need of fuel cells and the concept of their construction and functioning.	4. Evaluate different batteries or fuel cells in order to select a suitable battery or fuel cell for a given application
5. To emphasize on the merits and demerits of each type of battery.	

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).

Learning Resources:

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 Tests : 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 Tests : 90Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) :: IBRAHIMBAGH, HYDERABAD – 500 031.
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION (R-18) :: B.E. - EEE : FOURTH SEMESTER (2019 - 20)

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								
U18HS430EH	Skill Development-II : Communications Skills in English	2	-	-	3	60	40	2
U18HS010EH	Human Values and Professional Ethics -I	1	-	-	2	40	30	1
U18BS410MA	Numerical Methods, Probability and Statistics	3	-	-	3	60	40	3
U18ES410EC	Electronics Engineering-II	3	-	-	3	60	40	3
U18PC410EE	Digital Electronics	3	-	-	3	60	40	3
U18PC420EE	Electrical Measurements and Instrumentation	3	-	-	3	60	40	3
U18PC430EE	Electrical Machines - I	2	1	-	3	60	40	3
U18OE4X0XX	Open Elective-II	3	-	-	3	60	40	3
PRACTICALS								
U18ES411EC	Electronics Engineering Lab-II	-	-	2	3	50	30	1
U18PC421EE	Electrical Measurements and Instrumentation Lab	-	-	2	3	50	30	1
U18PC431EE	Electrical Machines Lab - I	-	-	2	3	50	30	1
	TOTAL	**20**	**01**	**06**	-	**610**	**400**	**24**
	GRAND TOTAL	**27**				**1010**		**24**
Student should acquire one online certificate course during III- VIII Semester								

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING
(Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Humanities and Social Sciences
COMMUNICATION SKILLS IN ENGLISH-II

SKILL DEVELOPMENT COURSE: II

FOR BE 2/4-IV SEMESTER (COMMON FOR ALL BRANCHES)

L:T:P(Hrs/Week):2:0:0	SEE Marks :60	Course Code: **U18HS430EH**
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

Students are given workbooks prepared by Talent Sprint.

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 Tests: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Humanities & Social Sciences
Human Values and Professional Ethics-1

Syllabus: COMMON FOR ALL BRANCHES - BE-2/4- **IV SEMESTER**

L:T:P(Hrs/Week):1:0:0	SEE Marks: 40	Course Code: **U18HS010EH**
Credits: 1	CIE Marks: 30	Duration of SEE: 2 Hours

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

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	: 1	Max. Marks for each Assignment	:	5
3. No. of Quizzes	: 1	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING
(Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mathematics
Numerical Methods, Probability & Statistics

SYLLABUS FOR B.E. IV-SEMESTER
(Civil, EEE & Mechanical only)

L:T:P(Hrs./week): 3:0:0	SEE Marks:60	Course Code: **U18BS410MA**
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 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: Interpolation (10 Hours):
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: Numerical Solutions of ODE (10 Hours):
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: Probability (10 Hours):
Random Variables - Discrete and Continuous Random variables- Properties- Distribution functions and densities - Expectation – Variance – Normal Distribution.

UNIT-IV: Test of Hypothesis (12 Hours):
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: Curve Fitting (10 Hours):
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 40^{th} 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

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 Tests: 90 Minutes

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

Department of Electronics and Communication Engineering

Electronics Engineering – II

SYLLABUS FOR B.E. (EEE) IV – SEMESTER

L:T:P (Hrs./week): 2:1:0	SEE Marks : 60	Course Code: **U18ES410EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
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.	On completion of the course, students will be able to 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 : 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 - II : 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 - III : Oscillators

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

UNIT - IV : 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.

UNIT - V : 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.

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 Tests: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Digital Electronics

SYLLABUS FOR B.E.IV-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks: 60	Course Code: **U18PC410EE**
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 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, Field Programmable Gate Array (FPGA).

Learning Resources:

1. Morris Mano M., Digital Design, Prentice Hall of India, Second Edition, 1994.
2. Zvi Kohavi, 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/ Goutam Saha :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:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Electrical Measurements and Instrumentation

SYLLABUS FOR B.E.IV-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks: 60	Course Code: **U18PC420EE**
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. 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 in a 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 Non electrical 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 electrodynamo meter power factor meter, frequency

meter – electrical resonance, Use of Oscilloscope in frequency, phase and amplitude measurements(Lissajous Patterns) and Weston type of synchoroscope.

UNIT -III : Measurement of Resistance, Inductance and Capacitance using Bridges:

Wheatstone's bridge, Kelvin's Double Bridge, Loss of charge method, Megger, Maxwell's Inductance bridge, Hay's bridge, Anderson's bridge, Desauty's bridge, Schering bridge, Wagner's Earthing device 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.T's 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 Tachogenerators. 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- Dhanpat RAi and Sons, Delhi, 2005
2. Umesh Sinha, Electrical and Electronics Measurements and Instruments, Satya Prakashan
3. F.W.Golding and Widdis, Electrical and Electronics Measurements and Instruments 5th Edition-2010

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Electrical Machines – I

SYLLABUS FOR B.E.IV-SEMESTER

L:T:P(Hrs/week):2:1:0	SEE Marks:60	Course Code: **U18PC430EE**
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 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. Understand the concepts of magnetic circuits. 2. Evaluate the stored and converted energy and also exerted force in electromechanical energy conversion devices. 3. Understand 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 Biot Savart 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, interpoles, 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 machines, Retardation test, Separation of losses.

UNIT –V : Single Phase 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, Concept of tap changing, on-load and off-load tap changers.

Three Phase Transformers:

Three phase transformers connections Y-Y, Δ- Δ, Δ-Y, Y-Δ, V-V and scott connections, Excitation phenomena of Transformers, 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 Mc Graw 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. 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), Mc Graw Hill, Singapore
10. John Hindmarsh, Electric Machines and their Applications, Pergamon Press, London, 1977.

Online Resources:

1. http://www.nptelvideos.in/2012/11/electrical-machines-i.html
2. 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:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

With effect from the Academic Year 2019-20

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

Department of Electronics and Communication Engineering

Electronics Engineering – II Lab

SYLLABUS FOR B.E. (EEE) IV – SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U18ES411EC**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
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.	On completion of the course, students will be able to 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 day-to-day laboratory class work			18
Duration of Internal Test: **2 Hours**			

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & 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: **U18PC421EE**
Credits : 1	CIE Marks:30	Duration of SEE: 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To have fair knowledge about Transient, Frequency response of RLC-circuits and Parameters of network. 2. To understand the various theorems concepts and their application. 3. To understand the construction, working principles, calibration and applications of different types of Analog instruments – Ammeter, Voltmeters, Watt meter, Energy meter and Potentiometers. 4. To have the knowledge of measurement of circuit elements R, L & C using bridges.	1. Able to identify and choose the proper type of theorem to solve the circuits. 2. Able to identify and choose the proper type and range of meter to measure current, voltage, Power and Energy. 3. Student can calibrate ammeter, voltmeter and wattmeter using the Potentiometer. 4. Student can calculate the R, L & C values using the proper bridges.

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 Maxwell's and Anderson's Bridge
4. Measurement of Capacitance by DeSautry's bridge
5. Calibration of Voltmeter & Ammeter by using D.C Potentiometer.

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 at 1KHZ and 100 KHZ frequency of supply by using LCR meter.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for day-to-day laboratory class work			18
Duration of Internal Test: **2 Hours**			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering
Electrical Machines Lab - I

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P(Hrs./week):0:0:2	SEE Marks: 50	Course Code: **U18PC431EE**
Credits : 1	CIE Marks: 30	Duration of SEE: 3Hours

COURSE OBJECTIVES	**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. Able to test the performance of various DC generators. 2. Able to test the performance of various DC motors. 3. Able to test the performance of single phase transformers. 4. Communicate effectively and support constructively towards team work. 5. Pursue lifelong learning for career and professional growth with ethical concern for society and environment

List of Experiments

1. Magnetization characteristics of separately excited D.C. generator.
2. Load characteristics of D.C Shunt generator.
3. Load characteristics of D.C Compound generator.
4. Performance characteristics of D.C Compound motor.
5. Retardation Test, Dynamic Braking of DC Shunt motor.
6. Swinburne's test & determination of performance characteristics of D.C. shunt motor.
7. Separation of core losses in a Single Phase transformer.
8. Sumpner's test on two identical transformers.

9. Estimation of efficiency of DC Machine by Hopkinson test.
10. Three phase to Two phase conversion (Scott Connection).
11. Heat run test on Three phase transformer.
12. Open-delta or V-V connection.
13. Polarity Test.
14. Field test on DC series machines.

From the above experiments, each student should perform at least 12 (Twelve) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: **2 Hours**			

OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN B.E. IV SEMESTER (2019-20)

Dept	Title	Code	credits
Civil	Disaster Management	U18OE410CE	3
CSE	Introduction to Data Structures	U180E410CS	3
CSE	Introduction to Software Engineering	U180E420CS	3
ECE	Mathematical Programming for Engineers	U18OE410EC	3
ECE	Introduction to Communication Systems	U18OE420EC	3
IT	Introduction to Object Oriented Programming	U18OE410IT	3
IT	Introduction to Scripting Languages	U18OE420IT	3
Mech.	Optimization Methods	U18OE410ME	3
Maths	Linear Algebra & Applications	U18OE410MA	3
Physics	Introduction to Optoelectronic Devices	U18OE410PH	3
Physics	Thin Film Technology and Applications	U18OE420PH	3

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

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: **U18OE410CE**
Credits : 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	**COURSE OUTCOMES**
Objectives of this course are to:	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.

Learning Resources:

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:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

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 : **U180E410CS**
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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 1 Hour 30 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

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 : **U180E420CS**
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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 1 Hour 30 Minutes

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

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: **U18OE410EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
To provide fundamental knowledge of programming language for solving problems.	On completion of the course, students will be able to 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 4th 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 Rudra Pratap, Oxford publications.
2. Advanced Guide to MATLAB-Practical Examples in Science and Engineering by 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:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

With effect from the Academic Year 2019-20

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

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: **U18OE420EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
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	On completion of the course, students will be able to 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 Superheterodyne 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

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Information Technology

INTRODUCTION TO OBJECT ORIENTED PROGRAMMING

(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: **U18OE410IT**
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.

Multithreaded Programming: Introduction to threads, creating threads, extending the Thread class, implementing the Runnable interface, life cycle of a thread, priority of a thread, synchronization, and Inter-thread Communication.

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

Exploring java.util: Scanner, StringTokenizer, BitSet , Date, Calendar, Timer.

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Information Technology

INTRODUCTION TO SCRIPTING LANGUAGES

(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 :**U18OE420IT**
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/

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

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2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

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: **U18OE410ME**
Credits :03	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVE	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of this course is 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. 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. Singiresu S.Rao, “Engineering optimization- Theory and Practice”, 4th Edition, 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.

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: 1 Hour 30 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

DEPARTMENT OF MATHEMATICS

(Common to all branches)

LINEAR ALGEBRA & APPLICATIONS

(OPEN ELECTIVE-II)

Syllabus for B.E., IV- Semester

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **U18OE410MA**
Credits : 3	CIE Marks:40	Duration of SEE:03Hours

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

UNIT –I

Vector Spaces -I (10 Hours)

Internal Composition - External Composition -Definition of Vector Space - Vector Subspaces – Algebra of Subspaces – Linear sum of two Subspaces – Linear Combination of Vectors – Linear Span of a set - Linear Dependence and Independence of vectors.

UNIT –II

Vector Spaces – II (10 Hours)

Basis of a Vector Space – Finite Dimensional Space – Coordinates – Dimension of a Vector Space – Dimension of a Subspace

UNIT-III

Linear Transformation -I (8 Hours):

Definition of Linear Transformation- Properties of Linear Transformations – Sum of Linear Transformations – Scalar multiplication of Linear Transformation – Product of Linear Transformations – Algebra of Linear Operators

UNIT-IV

Linear Transformation -II (6 Hours)

Range and kernel of a linear map – Dimension of Range and Kernel - Rank and nullity – Inverse of linear transformation - Rank nullity theorem- Matrix of Linear Transformation.

UNIT-V

Inner Product Spaces (8 classes)

Definition of Inner Product Space-Norm or Length of a vector – Schwarz's inequality-Triangle inquality – Normed vector space- Distance – orthogonal complement – Orthogonal and Orthonormal sets – Gram-Schmidt Orthogonalization process.

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 :

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 Tests	:	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 Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF PHYSICS
INTRODUCTION TO OPTOELECTRONIC DEVICES
(OPEN ELECTIVE-II)
Syllabus for B.E., IV- Semester

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **U18OE410PH**
Credits :03	CIE Marks:40	Duration of SEE:03Hours

Course Objectives	Course Outcomes
The student will be able to 1. gain knowledge on working of optoelectronic light sources like LED 2. grasp the concepts of lasing action, merits and demerits of lasers 3. acquire the fundamental knowledge on photo-detectors. 4. Narrate the properties of chromic materials	**At the end of the course, the student should at least be able:** 1. accustom with various device structures of optoelectronic light sources like LED 2. acquaint with various types of lasers and their applications 3. assimilate working and use of photo detectors and solar cells in various applications 4. appreciate the importance of chromic materials in engineering field

UNIT-I: LIGHT EMITTING DIODES

Review of semiconductors, direct and indirect band semiconductors, electron-hole pair generation and recombination process- emission radiation and band gap of semiconductor-electroluminescence-construction and working of homojunction LED- introduction to SLED and ELED-semiconductor materials for LED fabrication, and OLEDS, applications of LEDs.

UNIT-II: SEMICONDUCTOR LASERS

Semiconductor diode laser -construction-working principle- advantages and applications of diode lasers. Semiconductor lasers- rate equations for carrier and photon-density, and their steady state solutions, modes in resonating cavity, gain and loss, quantum efficiency, construction and working of homo-junction and hetero-junction semiconductor lasers, advantages and applications of lasers.

UNIT-III: SOLAR CELLS

Solar spectrum-Solar Cell- Photovoltaic effect- I-V characteristics of solar cell -fill factor, efficiency- materials fabrication of solar cells-thin film solar cell-solar panels- applications of solar cells.

UNIT-IV: PHOTODETECTORS

Photodiodes: Working and construction of Photodiode and its characteristics- dark current-PIN Photodiode-Avalanche Photodiode-Photodiode Quantum Efficiency-advantages and applications of photodiodes.

UNIT-V: CHROMIC MATERIALS (6 hours)

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. Ben G Streetman and Sany Kumar Banerjee, Solid state electronic devices, 7th edition, Pearson, 2016
2. Jasprit Singh, Semiconductor devices: Basic principles, Wiley, Delhi, 2014
3. M.N. Avadhanulu, Kshirsagar and TVS Arun Murthy, A textbook of Engineering Physics, 11th Edition, S. Chand, 2018.

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: **1 Hour 30 Minutes**

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

DEPARTMENT OF PHYSICS

THIN FILM TECHNOLOGY AND APPLICATIONS

(OPEN ELECTIVE-II)

Syllabus for B.E., IV- Semester

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **U18OE420PH**
Credits :03	CIE Marks:40	Duration of SEE:03Hours

Course Objectives	Course Outcomes
Students are able to	**The students acquire the ability to**
1. Learn the fundamental atomistic mechanisms. 2. Know thin film deposition techniques 3. Acquire knowledge on thin film devices 4. Acquaint with thin film devices 5. Appreciate applications of thin films	1. acquire range of basic knowledge fundamental definitions of thin film technology 2. narrate various thin film deposition techniques 3. list various thin film devices and their use 4. insights in possibilities and the importance of different thin films and coatings for a variety industrial applications

UNIT-I: THIN FILM GROWTH

Classification of films- formation of thin films- Condensation and nucleation, growth and coalescence of islands, -nucleation theories: capillarity and atomistic models, sticking coefficient, adhesion, substrate effect, film thickness effect.

UNIT-II: DEPOSITION TECHNIQUES

Thin film deposition techniques- simple thermal evaporation- Chemical vapor deposition technique-Advantages and disadvantages of Chemical Vapor deposition (CVD), physical vapour deposition electron beam evaporation- RF sputtering, flash evaporation, Laser ablation- spin coating- molecular beam epitaxy (MBE), Spin coating,Film thickness measurement-ellipsometry, quartz crystal oscillator techniques, structure and microstructure of thin films.

UNIT-III: THIN FILM MATERIAL CHARACTERIZATION TECHNIQUES

Characterization techniques: X-Ray Diffraction (XRD), working principles of Scanning Electron Microscopy (SEM), working of Transmission Electron Microscopy (TEM), Atomic Force Microscopy (AFM), Scanning Tunneling Microscope (STM), Field Ion Microscope (FEM).

UNIT-IV: PROPERTIES OF THIN FILMS

Electrical conduction in continuous and discontinuous metallic thin films. Transport and optical properties of metallic, semiconducting and dielectric films.

UNIT-V: THIN FILM DEVICES AND APPLICATIONS

Anti-reflection coatings, fabrication of thin film resistor, capacitor, diode, gas sensors and temperature sensors. Thin film solar cells, Quantum well and Quantum dot solar cells. Application of thin films in different areas such as electronics, medical, defense, sports, automobiles, applications of thin films in various fields etc.

Learning resources:

- Kasturi Chopra Thin Film Device Applications, Mac Graw Hill, New York, 2012

- A. Goswami, thin film fundamentals, New age international, 2006

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

1	No. of Internal Tests:	02	Max.Marks for each Internal Test:	30
2	No. of Assignments:	03	Max. Marks for each Assignment:	05
3	No. of Quizzes:	03	Max. Marks for each Quiz Test:	05

Duration of Internal Test: **1 Hour 30 Minutes**

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Activity Calendar

S.No.	Date	Day	Details of Activity / Public Holiday
JULY,2019			
1	15-07-2019	MON	Course Registration by Students--> BE III, V & VII SEMESTER
2	16-07-2019	TUE	Course Registration by Students--> BE III, V & VII SEMESTER
3	17-07-2019	WED	Course Registration by Students--> BE III, V & VII SEMESTER
4	18-07-2019	THU	Course Registration by Students--> BE III, V & VII SEMESTER
5	19-07-2019	FRI	Course Registration by Students--> BE III, V & VII SEMESTER
6	20-07-2019	SAT	Course Registration by Students--> BE III, V & VII SEMESTER
7	21-07-2019	SUN	PUBLIC HOLIDAY
8	22-07-2019	MON	Commencement of instruction : BE III, V & VII SEMESTER
9	23-07-2019	TUE	--
10	24-07-2019	WED	--
11	25-07-2019	THU	--
12	26-07-2019	FRI	--
13	27-07-2019	SAT	--
14	28-07-2019	SUN	PUBLIC HOLIDAY
15	29-07-2019	MON	BONALU- HOLIDAY

16	30-07-2019	TUE	--
17	31-07-2019	WED	**Guest Lecture on "Electrical Machine Design" for VII Semester students.**
AUGUST,2019			
18	01-08-2019	THU	--
19	02-08-2019	FRI	--
20	03-08-2019	SAT	--
21	04-08-2019	SUN	PUBLIC HOLIDAY
22	05-08-2019	MON	
23	06-08-2019	TUE	--
24	07-08-2019	WED	--
25	08-08-2019	THU	--
26	09-08-2019	FRI	--
27	10-08-2019	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
28	11-08-2019	SUN	PUBLIC HOLIDAY
29	12-08-2019	MON	BAKRID (ID-UL-FITR)
30	13-08-2019	TUE	--
31	14-08-2019	WED	--
32	15-08-2019	THU	INDEPENDENCE DAY
33	16-08-2019	FRI	**Two day workshop on MATLAB, "Simulation of Circuits & Fields" for III Semester under CCA activity.**
34	17-08-2019	SAT	**Essay writing competition under Professional Bodies for III-Semester students.**
35	18-08-2019	SUN	PUBLIC HOLIDAY
36	19-08-2019	MON	--

37	20-08-2019	TUE	--
38	21-08-2019	WED	**Guest Lecture on "Career Guidance" for III – Semester students.**
39	22-08-2019	THU	Orientation and Briefing session for Registration of subjects (ME/M.TECH III SEM)
40	23-08-2019	FRI	Orientation and Briefing session for Registration of subjects (ME/M.TECH III SEM)
41	24-08-2019	SAT	SRI KRISHNASHTAMI Orientation and Briefing session for Registration of subjects (ME/M.TECH III SEM)
42	25-08-2019	SUN	PUBLIC HOLIDAY
43	26-08-2019	MON	Commencement of Instruction (ME/M.TECH- III SEM)
44	27-08-2019	TUE	--
45	28-08-2019	WED	--
46	29-08-2019	THU	--
47	30-08-2019	FRI	**Two day workshop on MATLAB, "Simulation of Circuits & Fields" for II Semester under CCA activity**
48	31-08-2019	SAT	**Elocution competition under Professional Bodies for VII Semester students**

SEPTEMBER, 2019

49	01-09-2019	SUN	PUBLIC HOLIDAY
50	02-09-2019	MON	VINAYAKA CHAVITHI
51	03-09-2019	TUE	**Technical Quiz under Professional Bodies for V Semester students**
52	04-09-2019	WED	--
53	05-09-2019	THU	Teachers' Day celebrations
54	06-09-2019	FRI	--
55	07-09-2019	SAT	--

56	08-09-2019	SUN	PUBLIC HOLIDAY
57	09-09-2019	MON	I-Internal Test: BE III, V & VII SEMESTER
58	10-09-2019	TUE	MOHARRUM- PUBLIC HOLIDAY
59	11-09-2019	WED	I-Internal Test: BE III, V & VII SEMESTER
60	12-09-2019	THU	I-Internal Test: BE III, V & VII SEMESTER
61	13-09-2019	FRI	I-Internal Test: BE III, V & VII SEMESTER
62	14-09-2019	SAT	I-Internal Test: BE III, V & VII SEMESTER
63	15-09-2019	SUN	PUBLIC HOLIDAY- Engineers' Day
64	16-09-2019	MON	**Electro Officina – Hardware Model demonstration workshop.**
65	17-09-2019	TUE	--
66	18-09-2019	WED	--
67	19-09-2019	THU	--
68	20-09-2019	FRI	-- **Two day workshop on MATLAB, "Simulation of Circuits & Fields" for III Semester under CCA activity**
69	21-09-2019	SAT	Parent-Teacher Meeting- BE III, V & VII SEMESTER
70	22-09-2019	SUN	--
71	23-09-2019	MON	--
72	24-09-2019	TUE	--
73	25-09-2019	WED	--
74	26-09-2019	THU	-- **Guest Lecture on PLC & SCADA for V Semester students**
75	27-09-2019	FRI	**Two day workshop on MATLAB, "Simulation of Circuits & Fields" for III Semester under CCA activity**
76	28-09-2019	SAT	BATHUKAMMA STARTING DAY- PUBLIC HOLIDAY

77	29-09-2019	SUN	PUBLIC HOLIDAY
78	30-09-2019	MON	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH

OCTOBER, 2019

79	01-10-2019	TUE	
80	02-10-2019	WED	
81	03-10-2019	THU	
82	04-10-2019	FRI	
83	05-10-2019	SAT	
84	06-10-2019	**SUN**	
85	07-10-2019	MON	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH
86	08-10-2019	TUE	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH
87	09-10-2019	WED	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH
88	10-10-2019	THU	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH
89	11-10-2019	FRI	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH
90	12-10-2019	SAT	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH
91	13-10-2019	SUN	DASARA VACATGION --> All semesters of BE, MCA & ME/M.TECH
92	14-10-2019	MON	RECOMMENCEMENT OF CALSS WORK
93	15-10-2019	TUE	
94	16-10-2019	WED	**STTP - Power Electronics & Renewable Energy Systems Future & Scope**
95	17-10-2019	THU	
96	18-10-2019	FRI	
97	19-10-2019	SAT	FIRST CLASS TEST: ME/M.TECH- III SEM

98	20-10-2019	SUN	PUBLIC HOLIDAY
99	21-10-2019	MON	--
100	22-10-2019	TUE	--
101	23-10-2019	WED	--
102	24-10-2019	THU	--
103	25-10-2019	FRI	--
104	26-10-2019	SAT	--
105	27-10-2019	SUN	PUBLIC HOLIDAY- DEEPAVALI
106	28-10-2019	MON	--
107	29-10-2019	TUE	--
108	30-10-2019	WED	--
109	31-10-2019	THU	--
NOVEMBER, 2019			
110	01-11-2019	FRI	--
111	02-11-2019	SAT	--
112	03-11-2019	SUN	PUBLIC HOLIDAY
113	04-11-2019	MON	
114	05-11-2019	TUE	**Workshop on “Battery Management Systems”.**
115	06-11-2019	WED	
116	07-11-2019	THU	--

117	08-11-2019	FRI	--
118	09-11-2019	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
119	10-11-2019	SUN	EID MILAD-UN-NABI- PUBLIC HOLIDAY
120	11-11-2019	MON	--
121	12-11-2019	TUE	KARTHIKA PURNIMA/ GURUNANAK'S BIRTH DAY
122	13-11-2019	WED	II- INTERNAL TEST-BE III, V & VII SEMESTER
123	14-11-2019	THU	II- INTERNAL TEST-BE III, V & VII SEMESTER --
124	15-11-2019	FRI	II- INTERNAL TEST-BE III, V & VII SEMESTER
125	16-11-2019	SAT	II- INTERNAL TEST-BE III, V & VII SEMESTER--**> LAST DATE OF INSTRUCTION**
126	17-11-2019	SUN	PUBLIC HOLIDAY
127	18-11-2019	MON	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
128	19-11-2019	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
129	20-11-2019	WED	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
130	21-11-2019	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
131	22-11-2019	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
132	23-11-2019	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
133	24-11-2019	SUN	PUBLIC HOLIDAY
134	25-11-2019	MON	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
135	26-11-2019	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
136	27-11-2019	WED	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)

137	28-11-2019	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
138	29-11-2019	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
139	30-11-2019	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)

DECEMBER,2019

140	01-12-2019	SUN	PUBLIC HOLIDAY
141	02-12-2019	MON	**COMMENCEMENT OF THEORY EXAMS (BE III, V & VII SEMESTER)**
142	03-12-2019	TUE	--
143	04-12-2019	WED	**Faculty Paper Presentations**
144	05-12-2019	THU	**Faculty Paper Presentations**
145	06-12-2019	FRI	**Faculty Paper Presentations**
146	07-12-2019	SAT	--
147	08-12-2019	SUN	PUBLIC HOLIDAY
148	09-12-2019	MON	--
149	10-12-2019	TUE	**Recent Advances in Power Systems & Power Electronics**
150	11-12-2019	WED	**(FDP)**
151	12-12-2019	THU	--
152	13-12-2019	FRI	--
153	14-12-2019	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
154	15-12-2019	SUN	PUBLIC HOLIDAY
155	16-12-2019	MON	PROJECT SEMINAR (Presentation & Evaluation)- ME/M.TECH - III SEM
156	17-12-2019	TUE	PROJECT SEMINAR (Presentation & Evaluation)- ME/M.TECH - III SEM
157	18-12-2019	WED	PROJECT SEMINAR (Presentation & Evaluation)- ME/M.TECH - III SEM

158	19-12-2019	THU	PROJECT SEMINAR (Presentation & Evaluation)- ME/M.TECH - III SEM
159	20-12-2019	FRI	--
160	21-12-2019	SAT	**SECOND CLASS TEST: ME/M.TECH- III SEM--> LAST DATE OF INSTRUCTION**
161	22-12-2019	SUN	PUBLIC HOLIDAY
162	23-12-2019	MON	**SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER)**
163	24-12-2019	TUE	**SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER) DISPLAY OF ATTENDANCE AND SESSIONAL MARKS: ME/M.TECH- III SEM**
164	25-12-2019	WED	CHRISTMAS- PUBLIC HOLIDAY
165	26-12-2019	THU	BOXING DAY - PUBLIC HOLIDAY
166	27-12-2019	FRI	**SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER)**
167	28-12-2019	SAT	**SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER)**
168	29-12-2019	SUN	PUBLIC HOLIDAY
169	30-12-2019	MON	**Commencement of instruction : BE IV, VI & VIII SEMESTER**
170	31-12-2019	TUE	--
JANUARY, 2020			
171	01-01-2020	WED	--
172	02-01-2020	THU	--
173	03-01-2020	FRI	--
174	04-01-2020	SAT	--
175	05-01-2020	SUN	PUBLIC HOLIDAY

176	06-01-2020	MON	COMMENCEMENT OF THEORY EXAMS : ME/M.TECH - III SEMESTER
177	07-01-2020	TUE	-
178	08-01-2020	WED	-
179	09-01-2020	THU	-
180	10-01-2020	FRI	-
181	11-01-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
182	12-01-2020	SUN	PUBLIC HOLIDAY
183	13-01-2020	MON	--
184	14-01-2020	TUE	--
185	15-01-2020	WED	--
186	16-01-2020	THU	--
187	17-01-2020	FRI	--
188	18-01-2020	SAT	**Technical Paper Presentation competition under Professional Bodies.**
189	19-01-2020	SUN	PUBLIC HOLIDAY
190	20-01-2020	MON	--
191	21-01-2020	TUE	--
192	22-01-2020	WED	--
193	23-01-2020	THU	--
194	24-01-2020	FRI	--
195	25-01-2020	SAT	--
196	26-01-2020	SUN	REPUBLIC DAY -PUBLIC HOLIDAY

197	27-01-2020	MON	**Two day workshop on PSCAD/ETAP & PCB Design for IV Semester students under CCA Activity.**
198	28-01-2020	TUE	**Two day workshop on PSCAD/ETAP & PCB Design for IV Semester students under CCA Activity.**
199	29-01-2020	WED	--
200	30-01-2020	THU	--
201	31-01-2020	FRI	**Guest Lecture on "Application of Machine Learning in Electrical Engineering" for VII Semester students.**

FEBRUARY, 2020

202	01-02-2020	SAT	--
203	02-02-2020	SUN	PUBLIC HOLIDAY
204	03-02-2020	MON	COMMENCEMENT OF MAKE-UP EXAMS: ME/M.TECH- III SEM
205	04-02-2020	TUE	**Two day workshop on PSCAD/ETAP & PCB Design for IV Semester students under CCA Activity.**
206	05-02-2020	WED	**Two day workshop on PSCAD/ETAP & PCB Design for IV Semester students under CCA Activity.**
207	06-02-2020	THU	--
208	07-02-2020	FRI	--
209	08-02-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
210	09-02-2020	SUN	PUBLIC HOLIDAY
211	10-02-2020	MON	I-Internal Test: BE IV, VI & VIII SEMESTER

212	11-02-2020	TUE	I-Internal Test: BE IV, VI & VIII SEMESTER
213	12-02-2020	WED	I-Internal Test: BE IV, VI & VIII SEMESTER
214	13-02-2020	THU	I-Internal Test: BE IV, VI & VIII SEMESTER
215	14-02-2020	FRI	I-Internal Test: BE IV, VI & VIII SEMESTER
216	15-02-2020	SAT	--
217	16-02-2020	SUN	PUBLIC HOLIDAY
218	17-02-2020	MON	--
219	18-02-2020	TUE	--
220	19-02-2020	WED	--
221	20-02-2020	THU	Registration for ME/M.TECH : IV SEM
222	21-02-2020	FRI	--
223	22-02-2020	SAT	**Guest Lecture for VII Semester students.**
224	23-02-2020	SUN	PUBLIC HOLIDAY
225	24-02-2020	MON	--
226	25-02-2020	TUE	--
227	26-02-2020	WED	--
228	27-02-2020	THU	EUPHORIA & TECHFEST-2020
229	28-02-2020	FRI	EUPHORIA & TECHFEST-2020
230	29-02-2020	SAT	EUPHORIA & TECHFEST-2020

MARCH,2020

231	01-03-2020	SUN	PUBLIC HOLIDAY
232	02-03-2020	MON	--

233	03-03-2020	TUE	--
234	04-03-2020	WED	--
235	05-03-2020	THU	--
236	06-03-2020	FRI	--
237	07-03-2020	SAT	Parent-Teacher Meeting- BE IV, VI & VIII SEMESTER
238	08-03-2020	SUN	PUBLIC HOLIDAY
239	09-03-2020	MON	--
240	10-03-2020	TUE	--
241	11-03-2020	WED	--
242	12-03-2020	THU	--
243	13-03-2020	FRI	--
244	14-03-2020	SAT	PUBLIC HOLIDAY (2ND SATURDAY)
245	15-03-2020	SUN	PUBLIC HOLIDAY
246	16-03-2020	MON	--
247	17-03-2020	TUE	--
248	18-03-2020	WED	--
249	19-03-2020	THU	--
250	20-03-2020	FRI	--
251	21-03-2020	SAT	**Guest Lecture on "Energy Audit" for V Semester students.**
252	22-03-2020	SUN	PUBLIC HOLIDAY
253	23-03-2020	MON	--
254	24-03-2020	TUE	--
255	25-03-2020	WED	--

256	26-03-2020	THU	--
257	27-03-2020	FRI	--
258	28-03-2020	SAT	--
259	29-03-2020	SUN	PUBLIC HOLIDAY
260	30-03-2020	MON	--
261	31-03-2020	TUE	--

APRIL,2020

262	01-04-2020	WED	--
263	02-04-2020	THU	--
264	03-04-2020	FRI	--
265	04-04-2020	SAT	--
266	05-04-2020	**SUN**	**BABU JAGVIVAN RAM'S BIRTH DAY--> PUBLIC HOLIDAY**
267	06-04-2020	MON	--
268	07-04-2020	TUE	--
269	08-04-2020	WED	--
270	09-04-2020	THU	--
271	10-04-2020	FRI	--
272	11-04-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
273	12-04-2020	SUN	PUBLIC HOLIDAY
274	13-04-2020	MON	II-Internal Test : BE IV, VI & VIII SEMESTER

275	14-04-2020	TUE	DR BR AMBEDHKAR'S BIRTH DAY-PUBLIC HOLIDAY
276	15-04-2020	WED	II-Internal Test : BE IV, VI & VIII SEMESTER
277	16-04-2020	THU	II-Internal Test : BE IV, VI & VIII SEMESTER
278	17-04-2020	FRI	II-Internal Test : BE IV, VI & VIII SEMESTER
279	18-04-2020	SAT	II-Internal Test : BE IV, VI & VIII SEMESTER**--> Last date of instruction**
280	19-04-2020	SUN	PUBLIC HOLIDAY
281	20-04-2020	MON	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
282	21-04-2020	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
283	22-04-2020	WED	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
284	23-04-2020	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
285	24-04-2020	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
286	25-04-2020	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
287	26-04-2020	SUN	PUBLIC HOLIDAY
288	27-04-2020	MON	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
289	28-04-2020	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
290	29-04-2020	WED	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
291	30-04-2020	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)

	MAY,2020		
292	01-05-2020	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
293	02-05-2020	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
294	03-05-2020	SUN	PUBLIC HOLIDAY
295	04-05-2020	MON	**COMMENCEMENT OF THEORY EXAMS(BE IV, VI & VIII SEMESTER) / SUMMER VACATION STARTS FOR STAFF**
296	05-05-2020	TUE	--
297	06-05-2020	WED	--
298	07-05-2020	THU	--
299	08-05-2020	FRI	**LAST DATE FOR SUBMISSION OF DRAFT DISSERTATAION : ME/M.TECH IV**
300	09-05-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
301	10-05-2020	SUN	PUBLIC HOLIDAY
302	11-05-2020	MON	PRE SUBMISSION VIVA VOCE EXAM: ME/M.TECH IV SEM
303	12-05-2020	TUE	--
304	13-05-2020	WED	--
305	14-05-2020	THU	--
306	15-05-2020	FRI	--
307	16-05-2020	SAT	--
308	17-05-2020	SUN	PUBLIC HOLIDAY

309	18-05-2020	MON	--
310	19-05-2020	TUE	--
311	20-05-2020	WED	--
312	21-05-2020	THU	--
313	22-05-2020	FRI	--
314	23-05-2020	SAT	--
315	24-05-2020	SUN	PUBLIC HOLIDAY
316	25-05-2020	MON	--
317	26-05-2020	TUE	--
318	27-05-2020	WED	--
319	28-05-2020	THU	--
320	29-05-2020	FRI	--
321	30-05-2020	SAT	--
322	31-05-2020	SUN	PUBLIC HOLIDAY
	JUNE,2020		
323	01-06-2020	MON	--
324	02-06-2020	TUE	--
325	03-06-2020	WED	--
326	04-06-2020	THU	--

327	05-06-2020	FRI	--
328	06-06-2020	SAT	--
329	07-06-2020	SUN	PUBLIC HOLIDAY
330	08-06-2020	MON	--
331	09-06-2020	TUE	--
332	10-06-2020	WED	--
333	11-06-2020	THU	--
334	12-06-2020	FRI	Submission of approved thesis of the students External Evaluation: ME/M.TECH IV SEM
335	13-06-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
336	14-06-2020	SUN	PUBLIC HOLIDAY
337	15-06-2020	MON	--
338	16-06-2020	TUE	--
339	17-06-2020	WED	--
340	18-06-2020	THU	--
341	19-06-2020	FRI	--
342	20-06-2020	SAT	--
343	21-06-2020	SUN	PUBLIC HOLIDAY
344	22-06-2020	MON	Conduct of External Viva-voce : ME/M.TECH- IV SEM
345	23-06-2020	TUE	--

346	24-06-2020	WED	--
347	25-06-2020	THU	--
348	26-06-2020	FRI	--
349	27-06-2020	SAT	--
350	28-06-2020	SUN	PUBLIC HOLIDAY
351	29-06-2020	MON	--
352	30-06-2020	TUE	--
353	20.07.2020	MON	COMMENCEMENT OF III, V & VII SEMESTER BE CLASS WORK FOR THE YEAR 2020-2021