

**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 2021-22
(For the batch admitted in 2020-21)
(R-20)**



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Phones: +91-40-23146030, 23146031

Fax: +91-40-23146090

With effect from the Academic Year 2021-22
 VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS):: IBRAHIMBAGH, HYDERABAD – 500 031.
 DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 SCHEME OF INSTRUCTION AND EXAMINATION (R-20)::B.E. - EEE : THIRD SEMESTER(2021 - 22)

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								
U20BS310MA	Partial Differential Equations and Transform Techniques	3	-	-	3	60	40	3
U20ES310EC	Electronics Engineering - I	3	0	-	3	60	40	3
U20PC310EE	Electromagnetic Field Theory	3	1	-	3	60	40	4
U20PC320EE	Electrical Network Analysis	2	1	-	3	60	40	3
U20PC330EE	Power Systems -I	3	-	-	3	60	40	3
U20OE3X0XX	Open Elective-I	2	-	-	3	60	40	2
U20HS330EH	Skill Development Course-I (Communications Skills-I)	1	-	-	2	40	30	1
U20BS350MA	Skill Development Course-II (Aptitude-I)	1	-	-	2	40	30	1
U20MC310ME	Introduction to Entrepreneurship	1	-	-	2	40	30	0
PRACTICALS								
U20ES311EC	Electronics Engineering – I Lab	-	-	2	3	50	30	1
U20PC311EE	Electrical Network Analysis Lab	-	-	2	3	50	30	1
ECA-I		-	-	-	-	-	-	-
CCA-I		-	-	-	-	-	-	-
Library/Sports/Proctorial Interaction		-	-	-				
Total		19	02	4		580	390	22
Grand Total		25				970		22

Student should acquire one online course certification equivalent to two credits during III Sem to VII sem.

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

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MATHEMATICS
 Partial Differential Equations and Transform Techniques

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20BS310MA
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Study the Fourier series, conditions for expansion of function and half range series 2. Formulate and understand linear and nonlinear partial differential equations. 3. Study the applications of Partial Differential equations 4. Understand the Definition of Laplace and inverse Laplace Transforms-Shifting Properties and various theorems and how to apply them in solving Differential Equations. 5. Study the concept of Fourier and inverse Fourier Transform of a function and various properties. 	<ol style="list-style-type: none"> 1. Expand any function which is continuous, Discontinuous, even or odd in terms of its Fourier series. 2. Formulate the Partial differential equations by eliminating arbitrary constants and functions and solve linear, nonlinear Partial differential equations. 3. Solve the one dimensional wave(Vibrations of a string), heat equations and two dimensional heat equations. 4. Evaluate Laplace transforms and inverse Laplace transforms of functions. Apply Laplace transforms to solve ordinary differential equations arising in engineering problems. 5. Determine Fourier transform, Fourier sine and cosine transform of a function.

UNIT-I:

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

With effect from the Academic Year 2021-22

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.

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING
 Electronics Engineering – I

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20ES310EC
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
1. To give understanding on semiconductor materials and characteristics of the p-n junction diode. 2. To understand the operation of BJT, FET, MOSFET and characteristics of special purpose electronic devices. 3. To familiarize students with biasing circuits of BJT, FET, MOSFET.	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.

With effect from the Academic Year 2021-22

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 : Field 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.

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

Duration of Internal Test: 90 minutes

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electromagnetic Field Theory
 SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):3:1:0	SEE Marks: 60	Course Code: U20PC310EE
Credits: 4	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	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	<ol style="list-style-type: none"> 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.

With effect from the Academic Year 2021-22

UNIT I:

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

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

UNIT II:

Conductors, Dielectrics and Capacitance:

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

UNIT III:

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

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

UNIT IV:

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

With effect from the Academic Year 2021-22

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

Electromagnetic Interference and Compatibility (Theoretical Aspects only):

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

UNIT V:

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 minutes

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 Electrical Network Analysis

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):2:1:0	SEE Marks: 60	Course Code: U20PC320EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
The objective of Electrical Network Analysis is to provide the Knowledge on transient and steady state analysis of electrical circuits, Resonance, coupled circuits and two port network parameters. Also provide the Laplace approach to analyse electrical networks.	At the end of this course, students will demonstrate the ability to <ol style="list-style-type: none"> 1. Analyse the transient and steady-state response of first order and second order electrical circuits. 2. Apply and analyse the resonance in electrical circuits 3. Analyse the coupled circuits. 4. Analyse the two port networks. 5. Apply Laplace transforms to analyse the electrical circuits

Unit I:

Solution of First order networks

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

Unit II:

Solution of Second order networks

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

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Unit III:

Dual networks. Resonance and Magnetically Coupled Circuits

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

Unit IV:

Two Port Networks

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

Unit V:

Electrical Circuit Analysis Using Laplace Transforms:

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 minutes

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 Power Systems - I

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20PC330EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Have a fair knowledge about the fundamentals of various conventional power plants like Thermal, Hydel, Nuclear and Gas. 2. Acquire the knowledge of different types of Non conventional energy generation methods like Solar, Wind, Ocean Thermal Energy Conversion (OTEC), Tidal and Geo thermal. 3. Understand the Economics of Power Generation, Types of costs, Depreciation, methods of P.f. improvement, Tariffs 4. Have the knowledge of construction of Over head lines, materials, Supports, insulators and Underground cables. 5. General aspects of AC & DC distribution systems. 	<ol style="list-style-type: none"> 1. Identify and select the proper type of Power Plant for the Power Generation. 2. Estimate the Energy generated by Different Non conventional Generating stations. 3. Assess the P.F. improvement methods, Tariffs 4. Test and categorize the insulators and calculate the Sag & Tension in Over head lines. 5. Differentiate AC & DC distribution systems.

UNIT – I

Thermal, Hydel, Nuclear Power Generation Principles, Choice of site, layout and various parts of generating stations. Estimation of power in Hydel, flow duration curve, hydrograph, mass curve etc. Types of Hydel stations. Nuclear Stations, PWR, BWR, FBR. GAS Turbines, GAS power stations, Combined cycle power

stations. MAJOR DISASTERS around the world in power plants-
lessons learnt.

UNIT – II

Non-Conventional energy generation methods: Solar, Wind, Ocean Thermal Energy Conversion (OTEC), Tidal, Geo Thermal. Solar cells, Efficiency, Solar collectors, Concentrators. Wind generators, Wind turbine types, rotors construction, Hybrid power generation.

UNIT – III

Economics of Power Generation : Load Curve, load demand and diversity factors, base load and peak load operation, types of costs and depreciation fund calculations. Methods of power factor improvement, economics of p.f. improvements, tariffs.

UNIT- IV

Construction of Overhead lines - Overhead line materials – Supports – types, Vibration Dampers, Arcing Horns, Sag / Tension calculations, Equal / Unequal supports, Effects of Wind, ICE/Erection Conditions Stringing Charts

Insulators-Types –Material for construction – potential distribution over string of insulators, Equalizing of potential-Methods, Insulators testing.

Underground cables –Insulating Materials, Mechanical Protection, EHV / HV / LV cables, grading of cables, capacitance of 3 core cables.

UNIT – V

General aspects of AC and DC distribution systems –DC Systems, ringmain, Radial, Voltage drop calculations, Distributor fed at one end, Distributor fed at both ends.

With effect from the Academic Year 2021-22

Learning Resources

1. C.L. Wadhwa, Electrical Power Systems, Wiley Eastern Ltd. 5th Edition, 2005
2. C.L. Wadhwa, Generation, Distribution and Utilization of Electrical Energy, Wiley Eastern Ltd., 5th Edition, 2005
3. S.N. Singh- Electrical Power Generation, Transmission and Distribution- Prentice Hall Pvt. Ltd. New-2003.

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
 Skill Development Course I -Communication Skills in English I

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U20HS330EH
Credits: 1	CIE Marks: 30	Duration of SEE :2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Get students proficient in both receptive and productive skills especially virtually 2. Enable students to understand the importance and method of exchanging information in a formal space- both written and spoken 3. Introduce students to an ideal structure for a presentation and discussion- individually and in groups 4. Develop and improve reading skills needed for college work and reproduce the content based on the situational need 	<ol style="list-style-type: none"> 1. Introduce themselves effectively and converse in a formal environment especially in the online space 2. Write emails with appropriate structure and content 3. Use appropriate structure based on the content employing appropriate transitions in written and spoken communication 4. Paraphrase content and write an effective summary

Unit 1: Delightful Descriptions

- Introductions on an Online Forum
- Making Observations and Giving Opinion
- Recalling and Describing

Unit 2: Formal Conversation Skills

- Ask for Information
- Give Information
- Give Feedback
- Seek Permission

Unit 3: Technical Expositions and Discussions

- Classification
- Sequence
- Compare and Contrast
- Cause and Effect
- Problem and solution

Unit 4: Rational Recap

- Paraphrasing
- Summarizing

METHODOLOGY

- Case Studies
- Demonstration
- Presentations
- Expert lectures
- Writing and Audio-visual lessons

ASSESSMENTS

- Online assignments
- Individual and Group

Learning Resources:

learn.talentsprint.com

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF Humanities and Social Sciences

Skill Development Course-II (Aptitude-I)

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U20BS350MA
Credits: 1	CIE Marks: 30	Duration of SEE :2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
This is a foundation course and aims at enhancing employability skills.	1. Solve questions in the mentioned areas using shortcuts and smart methods.
Students will be introduced to higher order thinking and problem solving skills in the following areas - Arithmetic Ability, Numerical Ability and General Reasoning.	2. Understand the fundamentals concept of Aptitude skills.
Students will be trained to work systematically with speed and accuracy while problem solving.	3. Perform calculations with speed and accuracy.

UNIT 1: QUANTITATIVE APTITUDE - NUMERICAL ABILITY

- Introduction to higher order thinking skills
- Speed Math
- Number systems
- LCM & HCF

UNIT 2: QUANTITATIVE APTITUDE- ARITHMETIC ABILITY FOUNDATION

- Ratio proportions
- Partnership
- Ages
- Allegations and mixtures

With effect from the Academic Year 2021-22

- Averages

UNIT 3: QUANTITATIVE APTITUDE

- Percentages
- Profit and loss

UNIT 4: REASONING ABILITY- GENERAL REASONING PART 1

- Blood Relations
- Number Series
- Coding and decoding

UNIT 5: QUANTITATIVE APTITUDE Time and Work

- Chain Rule
- Pipes and Cisterns

Learning Resources:

Learn.talentsprint.com

METHODOLOGY	ASSESSMENTS
- Demonstration - Presentations - Expert lectures - Audio-visual lessons	- Online assignments - Individual and Group

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

1. No. of Internal Tests : Max. Marks for each Internal Test :

2. No. of Assignments : Max. Marks for each Assignment :

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING
Introduction to Entrepreneurship

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U20MC310ME
Credits: 0	CIE Marks: 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
inspire students develop an entrepreneurial mind-set, educate about the resources and schemes available to start enterprises in India.	<ol style="list-style-type: none">1. get awareness about entrepreneurship and potentially become an entrepreneur.2. discern the characteristics required to be a successful entrepreneur3. know the importance of effective communication.4. demonstrate effective sales skills

Unit-I: Sources of new ideas, techniques for generating ideas.

Team formation, how entrepreneurship has changed the country and world, entrepreneurial myths, E-cells and their significance, success story of entrepreneurs, eg: Practo, global entrepreneurs, entrepreneurial journeys, challenges, and successes, characteristics of a Successful Entrepreneur, entrepreneurial styles, introduction to business model.

Unit-II: Importance of effective communication for entrepreneurs, communication barriers, miscommunication, incorrect assumptions about people, importance of listening, design thinking-a problem solving process, sales skills, understanding the customer-centric approach, personal selling techniques, show and tell, elevator pitch, managing risks and learning from failures, women entrepreneurs.

With effect from the Academic Year 2021-22

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 Start-up", Currency, 1st edition, 2011.
7. <http://www.learnwise.org>

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

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

Duration of Internal Test: 60 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING

Electronics Engineering Lab-I
 SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U20ES311EC
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.

With effect from the Academic Year 2021-22

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. Characteristics of UJT.

New Experiments

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

Mini Project(s)

Designing of various basic applications using devices.

Learning Resources:

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

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

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Network Analysis Lab

SYLLABUS FOR B.E. III SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U20PC311EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
The objective of Electrical Networks Laboratory is to provide Under Graduate Engineer a thorough understanding on the behavior of electrical networks with hands-on experience, so that the student will acquire in depth knowledge on network analysis, network elements, resonance and coupled circuits to analyze and apply electrical engineering problems.	<ol style="list-style-type: none">1. Analyze the Sinusoidal response of R-L-C circuits.2. Analyze the Step response of first order and second order circuits.3. Understand and analyze the characteristics of resonance in electrical circuits.4. Understand and analyze the Coupled circuits.5. Evaluate two-port network parameters6. Apply simulation tools for analyze electrical networks.

List of the Experiments:

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

With effect from the Academic Year 2021-22

7. Determination of hybrid parameters and transmission parameters a two port network.
8. Simulation of Sinusoidal steady state response for R-L and R-C circuits.
9. Simulation of Step response of R-L, R-C and R-L-C circuits.
10. Simulation of resonant circuits- Characteristics and analysis
11. Simulation of two port networks- Determining z , y , h and ABCD parameters.

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

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

With effect from the Academic Year 2021-22

**OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN
B.E. III SEMESTER (2021-22)**

Dept	Title	Code	credits
Civil	Green Buildings	U200E310CE	2
CSE	Fundamentals Of Scripting Language	U200E310CS	2
CSE	Cyber Security	U200E320CS	2
ECE	Basics Of Electronic Communication	U200E320EC	2
IT	Fundamentals of Data Structures	U200E310IT	2
IT	Introduction to Linux	U200E320IT	2
Mech.	Geometric Modelling	U200E310ME	2
Mech.	Basic Heat Transfer For Electronic Systems	U200E330ME	2
Maths	Linear Algebra And Its Applications	U200E310MA	2
Chemistry	Battery science and Technology	U200E310CH	2
Chemistry	Corrosion science and it's application	U200E320CH	2
Physics	Smart Materials & Applications	U200E310PH	2

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF CIVIL ENGINEERING

GREEN BUILDINGS (Open Elective-I)

SYLLABUS FOR B.E. III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E310CE
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	Upon the completion of this course the students will be expected to:
<ol style="list-style-type: none">1. Learn the principles of planning and orientation of buildings.2. Environmental implications of natural and building materials along with green cover3. Acquire knowledge on various aspects of green buildings	<ol style="list-style-type: none">1. Explain the principles of building planning, its bylaws and provide facilities for rainwater harvesting2. Relate safety to Green Technology3. Understand the concepts of green buildings <p>Understand rating systems of GRIHA and LEED</p>

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

With effect from the Academic Year 2021-22

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

FUNDAMENTALS OF SCRIPTING LANGUAGE (OPEN ELECTIVE-I)

(Common for CIVIL, ECE, EEE & MECH)

SYLLABUS FOR B.E. III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E310CS
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. Design python programs using arithmetic expressions and decision making statements 2. Design modular python programs using functions 3. Develop programs using strings and list 4. Develop programs using tuples and dictionaries

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

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

Iteration: while statement

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

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

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

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

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CYBER SECURITY (OPEN ELECTIVE-I)

(Common for CIVIL, ECE, EEE & MECH)

SYLLABUS FOR B.E. III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E320CS
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To safeguard from threats and infection spread through the internet	On completion of the course, students will be able to 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.

With effect from the Academic Year 2021-22

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
BASICS OF ELECTRONIC COMMUNICATION (OPEN ELECTIVE)

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

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E320EC
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

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

UNIT – I

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

With effect from the Academic Year 2021-22

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

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

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

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E310IT
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Explore efficient storage mechanisms for easy access, design and implementation of various data structures.	On completion of the course, students will be able to <ol style="list-style-type: none">1. Identify appropriate linear data structure to solve a problem.2. Illustrate the usage of linked lists for various applications3. Demonstrate the usage of non-linear data structures – graphs & trees

UNIT – I:

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

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

Queues: Representation of a Queue using array ,Applications.

UNIT – II:

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

UNIT – III:

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

UNIT – IV:

Introduction to Non-Linear Data Structures: Trees and Graphs

Learning Resources :

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

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

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

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

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

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E320IT
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Acquire basic skills for using Linux operating system.	On completion of the course, students will be able to: <ol style="list-style-type: none">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.

With effect from the Academic Year 2021-22

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

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

Department of Mechanical Engineering
 GEOMETRIC MODELLING (Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E310ME
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objective of this course is to understand wire-frame modelling & transformations, surface, solid modelling and assembly modelling techniques.	On completion of the course, students will be able to 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.

With effect from the Academic Year 2021-22

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

Department of Mechanical Engineering
BASIC HEAT TRANSFER FOR ELECTRONIC SYSTEMS (Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E330ME
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
On completion of this 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

With effect from the Academic Year 2021-22

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. YunusCengel& 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. YunusCengel& 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

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|--------------------------|-----|-----------------------------------|------|
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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MATHEMATICS
 LINEAR ALGEBRA AND ITS APPLICATIONS (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E310MA
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. Determined distance, orthogonal, orthonormal sets and construct orthonormal basis based on Gram-Schmidt's Orothogonalization process.

UNIT – I (8 classes)

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

UNIT – II (6 classes)

Linear Transformation -I

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

UNIT – III(6 classes)

Linear Transformation -II

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

UNIT – IV(8 classes)

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

Text Books:

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

Reference Books:

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF CHEMISTRY

Battery science and Technology (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E310CH
Credits: 2	CIE Marks: 40	Duration of SEE :1.5 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of the course are	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) - comparison between lead acid battery and VRLA along with advantages - Construction, electro chemistry and applications of Nickel-Cadmium battery, Nickel metalhydride battery.

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

UNIT- IV: FUEL CELLS

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

Books:

1. P.C.Jain and Monica Jain, "Engineering Chemistry", DhanpatRai and Pub, Co., New Delhi (2002)
2. S.S. Dara "A text book of engineering chemistry" S.Chand and Co.Ltd., New Delhi (2006).
3. Dell R. M. and Rand D. A. J., "Understanding Batteries", Royal Society of Chemistry, UK, 2001.

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4. Chemistry of Engineering Materials 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 : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF CHEMISTRY
 Corrosion science and it's application (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E320CH
Credits: 2	CIE Marks: 40	Duration of SEE :1.5 Hours

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

UNIT-I: CHEMICAL AND ELECTROCHEMICAL CORROSION

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

With effect from the Academic Year 2021-22 pitting, waterline corrosion, crevice corrosion, stress corrosion and corrosion fatigue. Passivation of metals, polarization curve of passivating metals, effect of pH and potential for iron (pourbaix diagram) and the polarization curve of iron.

Factors influencing corrosion

- a. Nature of metal: Relative position of metal in galvanic series, over voltage, relative areas of anode and cathode and nature of corrosion product.
- b. Nature of environment: Temperature, pH, humidity and dissolved oxygen.

UNIT-II: CORROSION CONTROL BY METALLIC COATINGS

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

UNIT-III: CORROSION CONTROL BY ORGANIC COATINGS AND INHIBITORS

Organic Coatings: Paints – constituents and their functions. Vitreous enamel coatings. Varnishes. Super hydrophobic and self healing coatings. Epoxy coatings on RCC steel bars- impervious coatings. Corrosion inhibitors: Anodic, cathodic and vapour phase inhibitors.

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

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

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Books:

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

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

1. No. of Internal Tests : Max. Marks for each Internal Test :
 2. No. of Assignments : Max. Marks for each Assignment :
 3. No. of Quizzes : Max. Marks for each Quiz Test :
- Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

Department of PHYSICS
 Smart Materials & Applications (Open Elective)

SYLLABUS FOR B.E.III-SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U200E310PH
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The Students will be able to: <ol style="list-style-type: none"> 1. grasp the concepts of piezo 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 	On completion of the course, students will be able to <ol style="list-style-type: none"> 1. summarize various properties and applications of piezo and ferro electric materials 2. apply fundamental principles of pyro and thermo electricity in relevant fields of engineering 3. acquaint with various types of shape memory alloys and their properties and applications 4. appreciate the importance of chromic materials in engineering field.

UNIT I: PIEZO AND FERRO MATERIALS

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

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

UNIT II: PYRO AND THERMO-ELECTRIC MATERIALS

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

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

UNIT III: SHAPE MEMORY MATERIALS

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

UNIT-IV: CHROMIC MATERIALS

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

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

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

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

Learning Resources:

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

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

- | | | | |
|--------------------------|-----|-----------------------------------|------|
| 1. No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 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 2021-22
 VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) :: IBRAHIMBAGH, HYDERABAD – 500 031.
 DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 SCHEME OF INSTRUCTION AND EXAMINATION (R-20) :: B.E. - EEE : FOURTH SEMESTER(2021 - 22)

B.E (EEE) IV Semester									
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination				
		Hours per Week			Duration in Hrs	Maximum Marks		Credits	
		L	T	P/D		SEE	CIE		
THEORY									
U20BS410MA	Numerical methods, Probability and Statistics	3	-	-	3	60	40	3	
U20ES410EC	Electronics Engineering-II	3	-	-	3	60	40	3	
U20PC410EE	Power Systems- II	3	-	-	3	60	40	3	
U20PC420EE	DC Machines & Transformers	2	1	-	3	60	40	3	
U20PC430EE	Electrical Measurements & Instrumentation	3	-	-	3	60	40	3	
U20OE4X0XX	Open Elective-II	3	-	-	3	60	40	3	
U20BS430MA	Skill Development Course-III (Aptitude-II)	1	-	-	2	40	30	1	
U20PE430EE	Skill Development Course-IV (Technical Skills-I)	1	-	-	2	40	30	1	
U20HS010EH	Human Values and Professional Ethics -I	1	-	-	2	40	30	1	
PRACTICALS									
U20ES411EC	Electronics Engineering Lab-II	-	-	2	3	50	30	1	
U20PC421EE	DC Machines & Transformers Lab	-	-	2	3	50	30	1	
U20PC431EE	Electrical Measurements Lab	-	-	2	-	50	30	1	
CCA-II		-	-	-	-	-	-	-	
Remedial/Tutorial/CC		-	-	-	-	-	-	-	
Sports/Library/Proctorial Interaction		-	-	-					
Total		20	01	06		630	420	24	
Grand Total		27				1050	24		

Student should acquire one online course certification equivalent to two credits during III Sem to VII sem.

Note: 1. One hour is allocated for Library/Sports/Proctorial Interaction 2. Two hours are allocated for CCA-II 3. Two hours are allocated for CC/TC/RC

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MATHEMATICS
 Numerical methods, Probability and Statistics

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code:U20BS410MA
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<p>The course will enable the students to:</p> <ol style="list-style-type: none"> 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. 	<p>On completion of the course, students will be able to</p> <ol style="list-style-type: none"> 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.

With effect from the Academic Year 2021-22

UNIT-I:

Interpolation:

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

UNIT-II:

Numerical Solutions of ODE:

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

UNIT-III

Probability:

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

UNIT-IV:

Test of Hypothesis:

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

UNIT-V:

Curve Fitting:

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

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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. Probability, Statistics and Random Processes, T. Veerarajan , Tata MCGraw Hill Education Private Ltd.
4. Advanced Engineering Mathematics, Kreyszig E, 8 th Edition, John Wiley & Sons Ltd, 2006.
5. A text book of Engineering Mathematics by N.P.Bali& Manish Goyal, Laxmi Publication.
6. Fundamentals of Mathematical Statistics, Gupta & Kapoor, Sultan chand& sons, New Delhi.
7. <http://tutorial.math.lamar.edu/Classes/DE/DE.aspx>
8. <http://mathworld.wolfram.com/topics>
9. <http://www.nptel.ac.in/course.php>

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING
 Electronics Engineering-II

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20ES410EC
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 1. Analyze and design various feedback and multistage amplifiers. 2. Design a sinusoidal oscillators. 3. Analyze drift compensation techniques and differential amplifiers. 4. Design and analyze linear wave shaping circuits. 5. Design and analyze various non-linear wave shaping Circuits.

UNIT - I : Wave-Shaping Circuits

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

UNIT - II : Multi stage amplifiers

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

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

With effect from the Academic Year 2021-22

UNIT - III : Feedback amplifiers

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

UNIT - IV : Oscillators

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

UNIT - V : Power amplifiers

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Power Systems – II

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20PC410EE
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
1.Acquire knowledge of Transmission Lines Performance, Power circle diagrams & Corona.	1.Calculate and compare the performance (Constants A, B, C & D, voltage regulation & efficiency) of different types of Transmission lines.
2. Understand the Per Unit system of Representation, load flow studies and different load flow methods.	2. Apply proper load flow method for the solution of load flow problems of any power system network.
3. Learn about the Symmetrical Fault analysis and S.C capacity of a Bus.	3.Calculate the P.U quantities in power system and analyze symmetrical fault (LLL Fault) and calculate S.C capacity of a Bus.
4. Acquire the knowledge of the fundamentals of Sequence components, Sequence networks of Generator, T/F, T.M.L & Load and Unsymmetrical Fault analysis of power system	4. Draw the diagram of Sequence networks of different components and compute the Unsymmetrical Fault (LG, LL, LLG& LLLG) current value & MVA values.
5. Understand the concept of Travelling Wave theory and Bewley Lattice diagram.	5. Evaluate the value of coefficient of reflection and refraction of voltage or current wave and construct Bewley Lattice diagram.

With effect from the Academic Year 2021-22

UNIT I

Transmission Line Theory: Short, medium, long lines – Line calculations, Tuned lines – Power circular diagrams and their applications. Corona: Causes – Disruptive and Visual Critical Voltages, Power loss – minimization of Corona Effects.

UNIT II

Per Unit of Representation: Use of per Unit Quantities in power systems, Advantages of per unit system. Y bus formation, Modeling tap changing and phase shifting of transformers, formation of load flow problem, Gauss and Gauss seidel , Newton Raphson and fast decoupled methods

UNIT III

Symmetrical faults:

Z bus, Symmetrical Three phase Transients in R-L series circuits – short circuit currents – Reactance's of Synchronous Machines – Symmetrical Fault calculations. short circuit capacity of bus.

UNIT IV

Unsymmetrical faults: Symmetrical components of unsymmetrical phasors – Power in terms of symmetrical components - sequence impedance and sequence networks. Sequence networks of unloaded generators – Sequence impedances of circuit elements – Single line to ground, line-to-line and double line to ground faults on unloaded generator – Unsymmetrical faults of power systems.

UNIT V

Transients in power systems : Causes of over voltages : Traveling Wave Theory – Wave equation – Open Circuited Line – The short circuited line – Junction of lines of different natural impedances – Reflection and refraction – Coefficients – Junction of Cable and overhead lines – Junction of three lines of different natural impedances – Bewley Lattice diagram.

Learning Resources:

1. C.L. Wadhwa , Electrical Power Systems, Wiley Eastern Ltd., 4th Ed. 2006.

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2. John J.Grainger William D. Stevenson Jr. Power System Analysis, Tata MCGraw Hill Edn.2003
3. I.J.Nagrath & D.P.Kothari "Modern Power Systems Analysis" TMH Edition, 2003.
4. A. Chakrabarti, M.L.Soni, P.V.Gupta, U.S.Bhatnagar, A Text book on Power System, Dhanpat Rai & Co(P) Ltd.

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DC Machines & Transformers

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):2:1:0	SEE Marks: 60	Course Code: U20PC420EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	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	<ol style="list-style-type: none">1. Analyze the concepts of magnetic circuits, evaluate the stored and converted energy and also exerted force in electromechanical energy conversion devices.2. Identify and analyze the operation of dc Generators.3. Analyze the operation and characteristics of DC motors.4. Analyze the single phase transformer operation and characteristics.5. Analyze three phase transformer operation and different configurations.

UNIT –I

Magnetic circuits, Electromagnetic force and torque:

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. B-H

With effect from the Academic Year 2021-22
curve of magnetic materials; Field energy and mechanical force, Direction
of mechanical force developed, Flow of energy in electro-mechanical
devices, singly excited and multiply excited systems

UNIT –II

DC Machines:

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

DC Generators:

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

UNIT –III

DC Motors:

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

UNIT –IV

Transformers:

Constructional features, Classification of transformers, 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, condition for maximum efficiency,
All day efficiency, , Separation of losses, Parallel Operation.

UNIT –V

Auto transformer, Realization of auto transformer from two winding
transformer, Tap Changing Transformers: Concept of tap changing, on-
load and off-load tap changers. Three Phase Transformers: Realization of
3-phase transformer from 3single phase transformers, Three phase

With effect from the Academic Year 2021-22

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

Learning Resources:

1. Dr. P.S. Bhimbra, Electrical machinery, 7th edition (2011), Khanna Publications, Delhi
 2. Fitzgerald, Kingsley, Umans, Electric Machinery, 6th edition (2002), Tata McGraw Hill Publications New Delhi3. A. E. Fitzgerald and C. Kingsley, "Electric Machinery", McGraw Hill Education, 2013.
 4. D.P Kothari and I.J Nagrath, Electrical Machines, 1st edition (2006), Tata McGraw Hill Publications, Sigma series, New Delhi
 5. Dr. P.S. Bhimbra, Generalized Electrical Machines, 5th edition (1991), Khanna Publications, Delhi
 6. J. B Gupta, Theory and performance of electrical machines, 15th edition (2015), S. K. Kataria& Sons publications, New Delhi
 7. A. E. Clayton and N. N. Hancock, "Performance and design of DC machines", CBS Publishers, 2004.
 8. M. G. Say, "Performance and design of AC machines", CBS Publishers, 2002.
 9. H. Cotton, Electrical Technology, 7th edition (2005), CBS publishers, New Delhi
 10. Stephen. J. Chapman: Electric Machinery Fundamentals, 4th edition (2005), McGraw Hill, Singapore
 11. John Hindmarsh, Electric Machines and their Applications, Pergamon Press, London, 1977.
 12. <http://www.nptelvideos.in/2012/11/electrical-machines-i.html>
<http://ieeexplore.ieee.org/search/searchresult.jsp?queryText=Electrical%20Machinery&newsearch=true>
- Online resources: <http://nptel.ac.in/courses/>; <http://ocw.tufts.edu/>;
<http://ocw.upm.es/>; www.open.edu/openlearn/

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

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|--------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| 1. No. of Internal Tests | : <input type="text" value="2"/> | Max. Marks for each Internal Test | : <input type="text" value="30"/> |
| 2. No. of Assignments | : <input type="text" value="3"/> | Max. Marks for each Assignment | : <input type="text" value="5"/> |
| 3. No. of Quizzes | : <input type="text" value="3"/> | Max. Marks for each Quiz Test | : <input type="text" value="5"/> |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Measurements & Instrumentation

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20PC430EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
Enable the student to Have a fair knowledge about the fundamentals of construction & working principles of Analogue Ammeters, Voltmeters, Watt meters, Energy meters, power factor meters and frequency meters. Learn the measurements of circuit elements R, L & C using bridges, construction & working principle and applications of DC & AC potentiometers, CTs & PTs. Learn the fundamentals of Transducers & Strain Gauges.	<ol style="list-style-type: none">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 Potentiometer5. Identify and choose the proper type of Transducer or strain gauge for measurement of Nonelectrical quantities.

UNIT -I

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

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

UNIT –II

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

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

UNIT -III

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

UNIT -IV

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

UNIT -V

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

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

DEPARTMENT OF MATHEMATICS

Skill Development - III : Aptitude II
SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 30	Course Code: U20BS430MA
Credits: 1	CIE Marks: 40	Duration of SEE :2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
APTITUDE	APTITUDE
Build further on aptitude skills and enhance employability skills	Solve questions in the mentioned areas using shortcuts and smart methods
Enhance higher order thinking skills and problem solving in the following areas - Arithmetic ability, Numerical ability and General reasoning	Understand the fundamentals concept of Aptitude skills
Train to work systematically with speed and accuracy while problem solving	Perform calculations with speed and accuracy

**UNIT 1: QUANTITATIVE APTITUDE- ARITHMETIC ABILITY
ADVANCED**

- Time speed and distance
- Boats and Streams
- Problems on trains

UNIT 2: REASONING ABILITY- LOGICAL REASONING

- Seating Arrangements- Linear; Circular; Complex
- Venn diagrams
- Syllogism
- Cubes & Cuboids

With effect from the Academic Year 2021-22

- Dices

UNIT 3: REASONING ABILITY- NON VERBAL REASONING

- Figure Series
- Directions
- Clocks
- Calendars

UNIT 4: QUANTITATIVE APTITUDE -

- Mensuration Part -1
- Mensuration Part -2
- Logarithms

UNIT 5: QUANTITATIVE APTITUDE

- Permutations and combinations
- Probability

METHODOLOGY	ASSESSMENTS
- Demonstration - Presentations - Expert lectures - Audio-visual lessons	- Online assignments - Individual and Group

Learning Resources:

learn.talentsprint.com

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Skill Development-IV : Technical Skills-I

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 30	Course Code: U20PE430EE
Credits: 1	CIE Marks: 40	Duration of SEE : 3 Hours

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

Human Values and Professional Ethics -I

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code:U20HS010EH
Credits: 1	CIE Marks: 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none">1. Get a holistic perspective of value-based education.2. Grasp the meaning of basic human aspirations vis-a-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.	<ol style="list-style-type: none">1. Understand the significance of value inputs in a classroom and start applying them in their life and profession2. Distinguish between Personal and Professional life goals—constantly evolving into better human beings and professionals.3. Work out the strategy to actualize a harmonious environment wherever they work.4. Distinguish between ethical and unethical practices, and start implementing ethical practices5. Apply ethics and values in their personal and professional interactions.

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,

With effect from the Academic Year 2021-22
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

<ul style="list-style-type: none"> ● Questionnaires ● Quizzes ● Case-studies ● Observations and practice ● Home and classroom assignments 	<ul style="list-style-type: none"> ● Discussions ● Skits ● Short Movies/documentaries ● Team tasks and individual tasks ● Research based tasks ● Viva ●
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Relevant Websites, CD's and Documentaries

- Value Education website, [Http://www.universalhumanvalues.info](http://www.universalhumanvalues.info)
- UPTU website, [Http://www.uptu.ac.in](http://www.uptu.ac.in)
- Story of stuff, [Http://www.storyofstuff.com](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, Cycle wala 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.

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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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL COMMUNICATION ENGINEERING

Electronics Engineering Lab-II

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U20ES411EC
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
To develop an understanding of the underlying concepts of analog electronic circuits including feedback amplifiers, power amplifiers & oscillators, and design linear wave shaping and non-linear wave shaping circuits.	<ol style="list-style-type: none">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 clampers6. 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

With effect from the Academic Year 2021-22

7. Design of Colpitt's Oscillator

CYCLE - II Experiments

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

New Experiments

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

Mini Project(s)

Designing of various applications using devices.

Learning Resources:

- 1 Paul B. Zbar, Albert P. Malvino, Michael A. Miller, "Basic Electronics, A Text – Lab Manual", 7thEdition, TMH 2001.
- 2 Paul B. Zbar, Industrial Electronics,A Text-Lab Manual, 3rd Edition, TMH 1990.

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

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

DC Machines & Transformers Lab

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U20PC421EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

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

List of Experiments:

1. Magnetization characteristics of a self excited D.C. generator
2. Load characteristics of D.C Shunt Generator
3. Load characteristics of D.C Compound generator
4. Performance characteristics of a DC shunt motor
5. Performance characteristics of D.C Compound motor

With effect from the Academic Year 2021-22

6. Performance characteristics of D.C Series motor
7. Retardation Test, Dynamic Braking of DC Shunt Motor
8. Speed control and Swinburn's Test on DC shunt motor
9. Open circuit and short circuit test on a 1-phase transformer
10. Separation of core losses in a Single Phase transformer
11. Sumpner's test on two identical transformers
12. Estimation of efficiency of DC Machine by Hopkinson test.
13. Three phase to Two phase conversion (Scott Connection)
14. Heat run test on Three phase transformer.
15. Polarity Test and estimation of self and mutual inductance of a 1-phase transformer

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

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

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Measurements and Instrumentation Lab

SYLLABUS FOR B.E. IV SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U20PC431EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
Enable the student To learn the construction, working, calibration and applications of different types of Analog instruments – Ammeter, Voltmeters, Wattmeter, Energy meter, Potentiometers & Power factor meter and also have the fair knowledge of measurement of circuit elements R, L & C using bridges.	<ol style="list-style-type: none">1. Identify and choose the proper type and range of meter to measure current, voltage, Power, Energy and Power factor.2. Calibrate ammeter, voltmeter, Wattmeter and power factor meter using the Potentiometer.3. Calculate the R, L & C values using the proper bridges.4. Measure non-electrical quantity (displacement).

List of Experiments:

1. Measurement of low resistance by Kelvin's Double Bridge
2. Calibration of Single phase energy meter by Phantom Loading
3. Measurement of Inductance by Anderson's Bridge
4. Measurement of capacitance by DeSauty's bridge

With effect from the Academic Year 2021-22

5. Use of D.C Potentiometer for measurement of unknown voltage and impedance
6. Calibration of 3-phase Energy meter (Electromagnetic/static) by direct loading.
7. Calibration of Power Factor meter.
8. Measurements of 3 phase reactive power using single phase wattmeter.
9. Calibration of LPF meter by phantom loading.
10. Measurement of R,L,C & Q at 1KHz and 100 KHz frequency of supply by using LCR meter.
11. Characteristics of LVDT.
12. Experiment with the strain-gauge.

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

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

With effect from the Academic Year 2021-22

**OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN
B.E. IV SEMESTER (2021-22)**

Dept	Title	Code	credits
Civil	Disaster Management	U200E410CE	3
CSE	Introduction To Data Structures	U200E410CS	3
CSE	Introduction To Software Engineering	U200E420CS	3
ECE	Mathematical Programming for Engineers	U200E410EC	3
ECE	Introduction to Communication Systems	U200E420EC	3
IT	Introduction to Object Oriented Programming	U200E410IT	3
IT	Introduction to Scripting Languages	U200E420IT	3
Mech.	Optimization Methods	U200E410ME	3
HSS	Critical Thinking	U200E410EH	3

With effect from the Academic Year 2021-22

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF CIVIL ENGINEERING
 DISASTER MANAGEMENT (Open Elective-II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20OE410CE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES Objectives of this course are to:	COURSE OUTCOMES Upon the completion of this course the students will be expected to:
<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Attain knowledge on various types, stages, phases in disaster with international & national policies and programmes with reference to the disaster reduction. 2. Understand various types of natural disaster, their occurrence, Effects, Mitigation and Management Systems in India 3. Understand different types of manmade disasters, their occurrence, Effects, Mitigation and Management Systems in India. 4. Explain the utility of geography information systems (GIS), Remote sensing technology in all phases of disaster mitigation and management. 5. Understand the Role of Remote Sensing and Geographical Information Systems (GIS) in Disaster Management

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Suggested Books:

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

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

Department of Computer Science & Engineering
 INTRODUCTION TO DATA STRUCTURES (OPEN ELECTIVE-II)

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

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U200E410CS
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Identify and use appropriate data structure for a given problem. 2. Describe the linear and nonlinear data structures.	On completion of the course, students will be able to 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

With effect from the Academic Year 2021-22

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 Learning
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. YedidyahLangsam , Moshe J. Augenstein ,Aaron M. Tenenbaum, Data Structures Using C and C++ , Second Edition(2009), PHI
8. <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-006-introduction-to-algorithms-fall-2011/lecture-videos>
9. <http://nptel.ac.in/courses/106106127/>
10. <http://www.nptel.ac.in/courses/106102064>

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

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| 3. No. of Quizzes | : <input type="text" value="3"/> | Max. Marks for each Quiz Test | : <input type="text" value="5"/> |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

Department of Computer Science & Engineering
 INTRODUCTION TO SOFTWARE ENGINEERING (OPEN ELECTIVE-II)

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

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U200E420CS
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

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

With effect from the Academic Year 2021-22

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
 Mathematical Programming for Engineers (OPEN ELECTIVE - II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U200E410EC
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 <ol style="list-style-type: none"> 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

With effect from the Academic Year 2021-22

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.

With effect from the Academic Year 2021-22

Learning Resources:

1. Getting started with MATLAB "A quick introduction for scientist and engineers by RudraPratap, Oxford publications.
2. Advanced Guide to MATLAB-Practical Examples in Science and 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 Siau 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 : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Introduction to Communication Systems (OPEN ELECTIVE - II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U200E420EC
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<ol style="list-style-type: none">1. Distinguish between Amplitude and Frequency modulation methods and their application in Communication Receivers2. Explain why multiplexing methods are necessary in communications and compare FDM with TDM3. Compare and contrast FSK and BPSK modulation schemes employed in digital data transmission4. Draw the block diagrams of different types of communication systems and explain their operation	<p>On completion of the course, students will be able to</p> <ol style="list-style-type: none">1. Identify the Radio frequency spectrum and the bands of different types of radio systems2. Analyze the power, efficiency and transmission bandwidth of Amplitude and Frequency Modulated signals.3. Convert the Radio frequency to Intermediate frequency and explain the operation of Super heterodyne Receiver.4. Compare and contrast Frequency Division Multiplexing and Time Division Multiplexing used in the Communication systems5. Detect and correct errors present in bit stream data using parity check6. 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 versus 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

With effect from the Academic Year 2021-22

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY
INTRODUCTION TO OBJECT ORIENTED PROGRAMMING
(Open Elective-II) (Common for CIVIL, ECE, EEE & MECH)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U200E410IT
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Explain the fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, building simple GUI applications.	On completion of the course, students will be able to <ol style="list-style-type: none">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.

With effect from the Academic Year 2021-22

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

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

Interfaces: Defining interfaces, extending interfaces, implementing interfaces.

UNIT- II

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

UNIT- III

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

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

UNIT- IV

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

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

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

UNIT- V

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY
 INTRODUCTION TO SCRIPTING LANGUAGES
 (Open Elective-II) (Common for CIVIL, ECE, EEE & MECH)
 SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U200E420IT
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
This course will enable the students to acquire basic skills for writing python scripts.	On completion of the course, students will be able to <ol style="list-style-type: none"> 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.

With effect from the Academic Year 2021-22

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

- | | | | |
|--------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| 1. No. of Internal Tests | : <input type="text" value="2"/> | Max. Marks for each Internal Test | : <input type="text" value="30"/> |
| 2. No. of Assignments | : <input type="text" value="3"/> | Max. Marks for each Assignment | : <input type="text" value="5"/> |
| 3. No. of Quizzes | : <input type="text" value="3"/> | Max. Marks for each Quiz Test | : <input type="text" value="5"/> |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING
 OPTIMIZATION METHODS (Open Elective-II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U20OE410ME
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
understand Linear & non-linear programming, transportation modeling , CPM & PERT for project scheduling and control, and application of various optimization techniques for respective field engineering (Inter disciplinary)	<ol style="list-style-type: none"> 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 transshipment of Goods and products and Implement techniques like project management to analyze about material management. 4. Optimization of resources in multi disciplinary areas through non-linear programming under different conditions.

UNIT-I

Optimization-An overview

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

With effect from the Academic Year 2021-22

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, Dichotomous 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, Univariate 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.

With effect from the Academic Year 2021-22

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

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2021-22
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
 CRITICAL THINKING (Open Elective-II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U200E410EH
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<p>The objectives of this course are to:</p> <p>To help students:</p> <ul style="list-style-type: none"> • Identify the core skills associated with critical thinking. • Comprehend the various techniques of critical thinking. • Understand where to look for bias and assumptions in problem analysis • Understand Structure, standards, and ethics of critical thinking <p>Dents will learn</p> <ul style="list-style-type: none"> • How to control and evaluate their thought processes • How to reason effectively and consistently • Problem analysis best practises using their decision time most effectively 	<p>On completion of the course, students will be able to</p> <ul style="list-style-type: none"> • Analyse and use techniques for comparing alternative solutions • Demonstrate the difference between deductive and inductive reasoning. • Construct a logically sound and well-reasoned argument. • Evaluate, identify, and distinguish between relevant and irrelevant information • Formulate a thesis or Hypothesis • Employing Evidence/Information Effectively

With effect from the Academic Year 2021-22

UNIT I - Components of Critical Thinking

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

UNIT II - Non-Linear Thinking

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

UNIT III - Logical Thinking

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

UNIT IV - Evaluate Information

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

UNIT-V - Problem Solving

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

METHODOLOGY:-

Case Studies
Demonstration
Presentations
Expert lectures

ASSESSMENT :-

Online assignments
Individual and Group

With effect from the Academic Year 2021-22
Writing and Audio-visual lessons

Learning Resources:-

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

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Duration of Internal Test: 90 minutes