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

Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

Sponsored by
VASAVI ACADEMY OF EDUCATION
Hyderabad

STUDENT HAND BOOK
2019-20

Academic Regulations (VCE-2019-20) for B.E under
CHOICE BASED CREDIT SYSTEM (CBCS)
for the students admitted in the Academic Year 2019-20
(R-19)

+91-40-23146003, 23146002
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Website: www.vce.ac.in

With effect from the Academic Year 2019-20 (R-19)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-19)
B.E. – INFORMATION TECHNOLOGY : FIRST SEMESTER (2019 - 2020)

B.E (IT) I-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								
U19HS110EH	English Language and Communication – I	2	-	-	3	60	40	2
U19BS110MA	Engineering Mathematics – I	3	-	-	3	60	40	3
U19BS110PH	Semiconductor Physics and Optoelectronic Devices	3	1	-	3	60	40	4
U19ES120CS	Programming for Problem Solving	3	-	-	3	60	40	3
U19ES010EE	Basic Electrical Engineering	2	-	-	3	60	40	2
U19ES030CE	Engineering Drawing	1	-	2	3	60	40	2
PRACTICALS								
U19HS111EH	English Language and Communication Skills Lab-I	-	-	2	3	50	30	1
U19BS111PH	Semiconductor and Optoelectronics Lab	-	-	2	3	50	30	1
U19ES121CS	Programming for Problem Solving Lab	-	-	2	3	50	30	1
U19ES011EE	Basic Electrical Engineering Lab	-	-	2	3	50	30	1
Total		**14**	**1**	**10**	**--**	**560**	**360**	**20**
Grand Total		**25**			**--**	**920**		

Note:
1. One hour is allotted to Library / Sports / Personality Development Programme / Proctorial Interaction.
2. The left over hours are to be allotted to CC / RC / TC based on the requirement.

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

ENGLISH LANGUAGE AND COMMUNICATION-I

SYLLABUS FOR B.E. I SEMESTER
(Common to all branches)

L:T: P(Hrs/week):2:0:0	SEE Marks: 60	Course Code:**U19HS110EH**
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. Understand the role and importance of communication skills. 2. Realise the various features and functions of human language and communication, verbal and non-verbal. 3. Comprehend the use of words in different contexts. 4. Develop the habit of listening effectively to various speakers and lectures. 5. Develop reading strategies in order to understand various types of texts.	1. Greet and converse with friends, teachers, and strangers appropriately. 2. Listen and respond to lectures, talks and take notes. 3. Use language functionally and participate in classroom interactions and in simulated situations replicating the real world. 4. Read, comprehend, and answer questions on different types of texts and make notes. 5. Construct grammatically correct sentences for speaking and writing.

UNIT-1 1.0 Effective communication

1.1 Role and Importance of language and communication; Functions of communication;
Process of communication; Types of communication - formal and informal; verbal and nonverbal; Styles of communication; Channels of communication; Barriers to effective communication.

UNIT-2 2.0 Listening and Speaking skills

2.1 Importance of listening in effective communication; Active listening

2.2 Speaking skills: -Speaking strategies, Functions of oral communication- introducing a person and speaking about his/her achievements, situational dialogues; telephone etiquette; poster-presentations.

UNIT-3 3.0 Reading and Writing skills

3.1 Sub-skills of Reading; Understanding the functions of different texts, Reading comprehension

3.2 Written Communication: **Styles**

- Describing events, people, places, objects.
- Defining.
- Providing examples or evidence.
- Writing introduction and conclusion.

3.2.1 Written Communication: **Features of Writing**: -

Importance of proper punctuation, creating coherence, organizing principles of paragraphs in documents, Techniques for writing precisely using appropriate phrases and clauses and linkers.

UNIT-4 4.0 Vocabulary Building and Grammar

4.1 Vocabulary Building: The concept of Word Formation; Root words. Prefixes and suffixes;
Synonyms, antonyms, and standard abbreviations. Homonyms, Homophones.

4.2 Remedial English: Articles, Prepositions; Tense and Aspect;
Subject- Verb agreement;
Connectives; Direct and Indirect Speech, Common errors.

UNIT-5 5.0 Reading skills and Comprehension

5.1 Prose text- In love with Rocket Science- India's Missile Woman.

5.2 Poem- A psalm of life by Henry Wadsworth Longfellow.

Learning Resources:

1. E.Suresh kumar, P. Sreehari and J. Savithri - Essential English
2. Reading comprehension - Nuttal.J.C - Orient Blackswan
3. Sunitha Mishra. Murali Krishna, Communication Skills for Engineers, Pearson, 2004.
4. M. Ashraf Rizvi. Effective Technical Communication. Tata McGraw Hill, 2005.
5. Allen and Waters., How English Works.
6. Willis Jane., English through English.

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

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

Duration of Internal Tests : 90 Minutes

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

Department of Mathematics
Engineering Mathematics-I
SYLLABUS FOR B.E I-SEMESTER

(Common to all branches)

L : T (Hrs./week): 3:0:0	SEE Marks :60	Course Code:**U19BS110MA**
Credits :3	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. Understand the Mean value theorems, concepts of curvature, radius of curvature evolutes and envelopes and to expand functions using Taylor's series. 2. Acquire knowledge of partial derivatives, and expand functions using Taylor's series functions of two real variables and, maxima-minima. 3. Study the concepts of vector differentiation, Gradient, Divergence and Curl. 4. Learn how to evaluate double and triple integrals, Change of order of integration and change of variables and vector integration and its applications.. 5. Understand infinite series, nature and various tests to check the nature of infinite series .	1. Compute radius of curvature, evolute and envelope of a given curve and also to expand given function using Taylor's series. 2. Expand a given function in terms of Taylor's series and find Maxima and minima of functions of several variables also using Lagrange's method of multipliers. 3. Calculate the gradient and directional derivatives and Curl 4. Apply given double and triple integrals to evaluate area and volume and to use Green's theorem to evaluate line integrals, Stokes' theorem to give a physical interpretation of the curl of a vector field and the divergence theorem. 5. Identify the given series and apply an appropriate test to check its nature

UNIT-I:Differential Calculus

Introduction to Mean Value Theorems with Geometrical Interpretation(Without Proofs) - Taylor's Series – Expansion of functions on power series- Curvature- Radius of Curvature (Cartesian and Parametric co-ordinates) – Center of Curvature –Evolutes – Envelopes of one parameter family of curves.

UNIT-II:Multivariable Calculus

Limits- Continuity -Partial Derivatives - Higher Order Partial Derivatives - Total Derivates - Derivatives of Composite and implicit functions - Taylor's series of functions of two variables - - Maxima and Minima of functions of two variables with and without constraints - Lagrange's Method of multipliers.

UNIT-III:Vector Differential Calculus

Scalar and Vector point functions -Vector Differentiation-Level Surfaces-Gradient of a scalar point function- Normal to a level surface- Directional Derivative – Divergence and Curl of a Vector field-Conservative vector field.

UNIT-IV: Vector Integral Calculus

Multiple integrals : Double and Triple integrals(Cartesian) - Change of order of integration(Cartesian coordinates)

Vector Integration: Line, Surface and Volume integrals- Green's Theorem – Gauss Divergence theorem - Stokes's Theorem. (all theorems without proof).

UNIT-V: Infinite Series

Sequences- Series – Convergence and Divergence- Series of positive terms-Geometric series- p-series test - Comparison tests - D'Alemberts Ratio Test –Cauchy's root test - Alternating Series – Leibnitz test – Absolute and Conditional convergence.

Learning Resources:

1. Advanced Engineering Mathematics, Third Edition, R. K. Jain and S. R. K. Iyengar, Narosa Publishing House.
2. Higher Engineering Mathematics, B. S. Grewal 40th. Edition, Khanna Publishers.
3. Advanced Engineering Mathematics 8th Edition by Erwin Kreyszig , John Wiley & Sons.
1. Differential Calculus by Shanti Narayan S. Chand & Co
2. Vector Calculus – Schaum's outline series.
1. http://mathworld.wolfram.com/topics
2. http://www.nptel.ac.in/course.php

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

1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

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

SEMICONDUCTOR PHYSICS AND OPTOELECTRONIC DEVICES

SYLLABUS FOR B.E.I-SEMESTER
(Common to CSE and IT)

L:T:P(Hrs/week):3:1:0	SEE Marks:60	Course Code: **U19BS110PH**
Credits : 4	CIE Marks:40	Duration of SEE: 3Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. learn crystal structure and defects insolids 2. aware limits of classical free electron theory and use band theory toclassify solids. 3. know construction and signal lossesin various optical fibers 4. gain knowledge on workingof optoelectronicdevices 5. acquire fundamental knowledge on photo-detectors.	1. segregate crystals based on their structure and apply effects of defects on manipulation of properties ofsolids. 2. distinguish materials based on band theory of solids and appreciate use of materials for various applications. 3. summarize various merits, demerits and applications of opticalfibers. 4. accustom with various device structures of optoelectronic light sources like LED and lasers 5. assimilate working and use of photo detectors in various applications

UNIT-I: FUNDAMENTALS OF CRYSTAL STRUCTURE

Introduction-Space lattice, Basis, Unit cell, Bravais lattices and crystal systems, Miller Indices, X-ray diffraction, Bragg's law, powder x- ray diffraction-, crystalline, polycrystalline and amorphous materials, Point Defects: Schottky, Frankel Defects, effects of defects on properties ofsolids.

Classical free electron theory (Drude theory) and its limitations, Somerfield theory, de Broglie Hypothesis, wave function, Schrodinger wave equation for a particle in I-D box, Kronig-Penny model (introduction to origin of band gap), Energy bands in solids, E-k diagram, density of states for bulk, thin and nano materials, effective mass, classification of materials as metals, semiconductors, andinsulators.

UNIT-II: SEMICONDUCTOR PHYSICS

Intrinsic semiconductors, extrinsic semiconductors-doping, acceptor and donor impurities, Fermi-Dirac Statistics, expression for intrinsic and extrinsic carrier concentration (equilibrium carrier statistics), conductivity of intrinsic and extrinsic

semiconductor, law of mass action, dependence of Fermi level on carrier-concentration and temperature, mobility, Halleffect.
Diffusion and Drift current densities- Continuity equation - Semiconductor P-N junction formation, diode in equilibrium without bias, introduction metal-semiconductor Ohmic and Schottky junctions. Direct and indirect band gap semiconductors, carrier generation and recombination, radiative and non- radiative recombination mechanisms insemiconductors.

UNIT-III: FIBER OPTICS
Introduction, total internal reflection, propagation of light in optical fibre, numerical aperture, acceptance angle, types of optical fibres, evanescent field, light sources for optical fibers, Semiconductor materials for opto-electronic devices, various signal losses in optical fibers, Block diagram of optical communication system, advantages and application of optical fibers.

UNIT-IV: LED AND LASER
LIGHT EMITTING DIODE (LED): types of luminescence, construction and working of LED, characteristics of LED, quantum efficiency of LED, Homo junction and Hetero-junction structures, advantages and applications of LED.
LASERS: meta-stable states, population inversion, pumping, components of laser; condition for lasing, characteristics of lasers, types of lasers, construction and working of Ruby laser and He-Ne laser.
Semiconductor lasers- rate equations for carrier and photon-density, and their steady state solutions, modes in resonating cavity, gain and loss, quantum efficiency, construction and working of homo-junction and hetero-junction semiconductor lasers, advantages and applications of lasers.

UNIT-V: PHOTODETECTORS
PHOTO-DETECTORS: photoconductivity, expression for current gain in a photoconductor, construction, working and characteristics of photo-detectors like photo-diode, PIN, and Avalanche diode, performance of photo-detectors.
SOLAR CELL: Photovoltaic effect, air mass conditions, solar radiation spectrum, construction and working of homo and hetero junction solar cell, V-I characteristics of solar cell, quantitative treatment of spectral response, conversion efficiency, fill factor, thin film and tandem solar cells, applications of solar cells.

Learning Resources:
1. Charles Kittel, Introduction to Solid State Physics, 7thEdition, John Wiley & Sons,2008.
2. S. M. Sze, Semiconductor Devices: Physics and Technology, Wiley,2008.
3. Ben. G Streetman, Solid State Electronic Devices, PHI,2006
4. Pallab Bhattacharya, Semiconductor Optoelectronic Devices, PHI,2002
5. John M Senior, Optical Fiber Communications: Principles and Practice, 3rd Edition, Pearson,2010
6. Jasprit Singh, Semiconductor Devices Basic Principles, 2000, John Wiley

&Sons
7. M.N. Avadhanulu and P.G. Kshirsagar and TVS Arun, Murthy A Text Book Engineering Physics, 11th Edition, S. Chand,2018.
8. M.R Shenoy, NPTEL MOOCS course, Semiconductor opto-electronics.2018
9. M. Ali Omar, Elementary Solid-State Physics,1e, Pearson,2002

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

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

Duration of Internal Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAMMING FOR PROBLEM SOLVING

SYLLABUS FOR B.E. I-SEMESTER
(Common to CSE, IT, ECE and EEE)

L:T:P (Hrs./week):3:0:0	SEE Marks : 60	Course Code :**U19ES120CS**
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. Acquire problem solving skills. 2. Develop flow charts. 3. Understand structured programming concepts. 4. Write programs in C Language.	1. Design flowcharts and algorithms for solving a given problem using the fundamentals of programming. 2. Apply decision making, looping constructs and functions to develop programs for a given problem. 3. Store data using arrays and perform searching and sorting operations on the data. 4. Design programs on string handling and operations on arrays using dynamic memory management techniques. 5. Develop programs to store data and perform operations using structures and files.

UNIT-I:

Introduction to Computers: Components of a Computer, Operating system, Compilers,Computer Languages,Program Development Environments, Creating and Running programs, Algorithm, Flowchart.Number Systems: Binary, Decimal, Octal, Hexadecimal and Conversions.

Introduction to C Language: Background, C Programs, Identifiers, Types, Variables, Constants, Input/Output, Expressions, Precedence and Associativity, Side Effects, Evaluating Expressions, Type Conversion, Statements, Bitwise Operators.

UNIT-II:

Selection: Logical Data and Operators, if... else, switch Statements, Standard Functions.

Repetition: Loops, while, for, do-while Statements, Loop Examples, break, continue, goto.

Functions: Designing Structured Programs, Functions Basics, User Defined Functions, Inter-Function Communication, Standard Functions, Scope, Storage Classes-Auto, Register, Static, Extern, Scope Rules and Type Qualifiers.

UNIT-III:

Recursion: Recursive Functions, Preprocessor Commands.

Arrays: Concepts, Using Arrays in C, Inter-Function Communication, Array Applications, Two-Dimensional Arrays, Multidimensional Arrays, Linear Search and Binary Search, Selection Sort and Bubble Sort.

UNIT-IV:

Pointers: Introduction, Pointers for Inter-Function Communication, Pointers to Pointers, Compatibility, LValue and RValue, Arrays and Pointers, Pointer Arithmetic and Arrays, Passing on Array to a Function, Memory Allocation Functions, Array of Pointers, Programming Applications, Pointers to void, Pointers to Functions, Command Line Arguments.

Strings: Concepts, C Strings, String Input/Output, Functions, Arrays of Strings, String Manipulation Functions.

UNIT-V:

Type Definition (typedef), Enumerated Types.

Structure: Definition and Initialization of Structures, Accessing Structures, Nested Structures, Arrays of Structures, Structures and Functions, Pointers to Structures, Self Referential Structures, Unions.

Input and Output: Files, Streams, Standard Library Input/Output Functions,Character Input/Output Functions.

Learning Resources:

1. Forouzan B.A & Richard F. Gilberg, A Structured Programming Approach using C, 3rd Edition(2013), Cengage Learning.
2. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, 2nd Edition (2006), Prentice-Hall.
3. Rajaraman V, The Fundamentals of Computer, 4th Edition(2006), Prentice-Hall of India
4. Steve Oualline, Practical CProgramming,3rd Edition(2006),O'Reilly Press.

5. Jeri R. Hanly, Elliot B. Koffman, Problem Solving and Program Design in C, 5thEdition (2007), Pearson Education.
6. Balagurusamy E, Programming in ANSI C, 4th Edition(2008), TMG.
7. Gottfried, Programming with C, 3rd Edition(2010), TMH.
8. R G Dromey, How to Solve it byComputer,1st Edition(2006), Pearson Education.
9. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical programming-in-c-january-iap-2010/syllabus/
10. http://nptel.ac.in/syllabus/syllabus.php?subjectId=106104128

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

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

Duration of Internal Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

BASIC ELECTRICAL ENGINEERING

SYLLABUS FOR B.E I – SEMESTER (IT Branch)
SYLLABUS FOR B.E II – SEMESTER (CSE and ECE Branches)

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: **U19ES010EE**
Credits :02	CIE Marks:40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To provide an understanding of basics in Electrical circuits 2. To explain the working principles of Electrical Machines.	1. Analyze Electrical circuits to compute and measure the parameters of Electrical Energy. 2. Comprehend the working principles of DC Machines. 3. Identify and test the various Electrical switchgear, single phase transformers and assess the ratings needed in given application. 4. Comprehend the working principle of AC machines.

Unit-I: D.C. Circuits:
Electrical circuit elements (R, L and C), independent voltage and current sources, Kirchhoff current and voltage laws, Source transformation, Mesh Analysis, Nodal analysis, Superposition theorem, Thevinin's and Norton's Theorem, Maximum power transfer theorem, Tellegen's theorem.

Unit II: A.C. Circuits:
Representation of sinusoidal waveform - peak and rms values, form factor, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single-phase ac series combinations of R-L-C circuits, Three-phase balanced circuits, voltage and current relations in star and delta connections.

Unit III: DC Machines:
Construction, Working principle of DC Generator and DC motor , EMF equation, Types of DC Generators & motors, Torque in a DC motor, Torque – speed characteristic of DC Shunt motor, Speed control of DC shunt motor.

Unit IV: Single Phase Transformers and Electrical Installation:
Principle of operation, Ideal and practical transformer on No-load and Load, Equivalent circuit, losses in transformers, efficiency.
Components of LT Switchgear: Switch fuse unit (SFU), MCB, Earthing, elementary calculations for Energy consumption, power factor improvement.

Unit V: Induction Motors and Stepper Motors:
Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, torque-slip characteristics.
General construction, working and applications of Stepper motor and BLDC motor.

Learning Resources:

1. D. P. Kothari and I. J. Nagrath, “Basic Electrical Engineering”, Tata McGraw Hill, 2010.
2. D. C. Kulshreshtha, “Basic Electrical Engineering”, McGraw Hill, 2009.
3. L. S. Bobrow, “Fundamentals of Electrical Engineering”, Oxford University Press, 2011.
4. E. Hughes, “Electrical and Electronics Technology”, Pearson, 2010.
5. V.K Mehta, Rohit Mehta, “Principles of Electrical Engineering and Electronics”, S Chand & Company Ltd, 2006.
6. J.B. Guptha, A course in electrical installation estimating and costing, reprint 2013, published by S.K. Kataria & Sons.
7. V. D. Toro, “Electrical Engineering Fundamentals”, Prentice Hall India, 1989.

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

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

Duration of Internal Tests : 90 Minutes

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

ENGINEERING DRAWING

SYLLABUS FOR B.E. I-SEMESTER
(Common to CSE, IT, EEE & ECE)

L:T:P (Hrs./week): 1:0:2	SEE Marks:60	Course Code: **U19ES030CE**
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. Impart skills in using drawing instruments to convey exact and complete information of the object. 2. Construct conic sections and regular polygons. 3. Construct the orthographic projections of points, lines, planes and solids. 4. Draw sections and development of regular solids. 5. Visualize and construct isometric projections from orthographic projections of regular solids.	1. Acquire proficiency in instrumental drawing and will be able to visualize the object, draw conic sections and regular polygons. 2. Draw the orthographic projections of points, lines and planes. 3. Draw orthographic projections of regular and right solids 4. Draw the sections and development of regular solids 5. Visualise and draw the isometric view from the orthographic views of regular solids and combinations of solids.

UNIT-I

Introduction to Engineering Drawing: Necessity of Engineering Drawing for engineers, Use of Drawing Instruments, Types of Lines, Lettering practice, Dimensioning and its methods, Conic sections by eccentricity method, Regular polygons given the length of side.

UNIT-II

Orthographic Projections: Principles of orthographic projections, conventions, projections of points placed in different quadrants.

Projections of straight lines inclined to one and two reference planes placed in first quadrant only, Traces (By conventional methods only). Projections of perpendicular planes, oblique planes and their traces.

UNIT-III

Projections of Regular Solids: Projections of prism, cylinder, pyramid and cone in simple positions and axis inclined to one reference plane only.

UNIT-IV

Sections and Developments of Solids: Sections of solids in simple positions only for prism, pyramid, cylinder and cone and their development.

UNIT-V

Isometric Projections: Principles of isometric projections – Isometric scale, Isometric axes, Isometric planes, Isometric view.
Isometric views of lines, planes, regular solids, and combination of two solids.

Learning Resource:

1. Bhatt N.D. "Elementary Engineering Drawing",CharotarPublishers,2014.
2. Thomas E French, Charles J Vierck, Robert J. Foster,"Engineering Drawing and Graphic Technology",McGrawHillEducation, 1993.
3. Gill P.S."EngineeringDrawing: GeometricalDrawing",SKKataria&sons, 2012.
4. Venugopal.K"EngineeringDrawingandGraphicsPlusAutocad",NewAgeInternational(P)Ltd., NewDelhi,2010.
5. Siddiquee A.N"EngineeringDrawingwithaPrimeronAutocad",PrenticehallofIndiaLtd., NewDelhi,2004.
6. BasanthAgrawal,Agrawal C.M"Engineering Graphics"FirstEdition,TataMcGraw Hill,2012
7. BVR Gupta, MRajaRoy, "Engineering DrawingwithAutoCad",IKIntPvtLtd, 2009.
8. NPTEL Course (www.nptel.ac.in)
9. Virtual labs (www.vlab.co.in)

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

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

Duration of Internal Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB-I

SYLLABUS FOR B.E. 1/4 - I SEMESTER
(Common to all branches)

L:T:P(Hrs/week):0:0:2	SEE Marks : 50	Course Code:**U19HS111EH**
Credits: 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. Identify and describe phonemes in English. 2. Learn the speech sounds and distinguish between vowel and consonant sounds in the English language. 3. Reduce mother tongue influence when speaking English. 4. Understand and follow the rules in debates, group discussions, interviews and role plays. 5. Develop reading skills and analyse various text types. 6. Use dictionary for pronunciation and transcription of words.	1. Use language with appropriate pronunciation. 2. Modify language, based on the context and situations. (formal and informal). 3. Participate effectively in group discussions and debates. 4. Enact role plays. 5. Use language coherently. 6. Comprehend various text types.

1.0 PHONETICS LAB- TOPICS

1.1 Introduction to English Phonetics:

Introductory to auditory, acoustic and articulatory phonetics. Organs of speech: the respiratory, articulatory and phonatory systems.

1.2 Sound System of English: Phonetic sounds, Introduction to International Phonetic Alphabet;
The Syllable: Types of syllables, Transcription.

2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS

2.1 Group discussion:

Objectives of GD, Types of GDs; Initiating, Continuing, and concluding a GD. (Basic Level)

2.2 Debate:

understanding the difference between a debate and a group discussion, essentials of debate, concluding a debate. (Basic Level)

2.3 Role Plays: -

Use of structured and semi-structured dialogues in a variety of situations and settings.

2.4 Interview Skills - Basic HR questions.

Viva questions will be asked in internal and external exams.

3.0 READING SKILLS LAB - TOPICS

3.1 Teaching different types of texts for comprehension

Viva questions will be asked in internal and external exams.

Learning Resources:

1. Speak Well: Jayshree Mohanraj, Kandula Nirupa Rani and Indira Babbellapati - Orient Black Swan
2. Balasubramanian: A textbook of English phonetics for Indian students, Macmillan, 2008.
3. Priyadarshini Patnaik : Group discussion and interviews, Cambridge University Press India private limited 2011.
4. Daniel Jones: Cambridge English Pronouncing Dictionary - A Definitive guide to contemporary English Pronunciation.
5. Reading Cards (Eng400): Orient Black Swan. Reading Squabble - Hadfield.

No. of Internal Tests: 01 Max. Marks for Internal Test: 30

Duration of Internal Test: 120 Minutes

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

SEMICONDUCTOR AND OPTOELECTRONICS LAB

SYLLABUS FOR B.E. I SEMESTER
(Common to CSE and IT)

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: **U19BS111PH**
Credits : 1	CIE Marks:30	Duration of SEE: 3Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. Make precise measurements using basic physical principles and acquire skills to handle the instruments 2. Relates the theoretical Knowledge to the behavior of Practical Physical world. 3. Analyze errors in the experimental data. 4. Plot graphs between various physical parameters.	1. Conduct experiments, take measurements independently. 2. Write appropriate laboratory reports. 3. Compute and compare the experimental results and draw relevant conclusions and interpret the results. 4. Use the graphical representation of data and estimate results from graphs.

List of the Experiments:

1. Determination of characteristics of He-Ne lasers.
2. Calculation of numerical aperture, acceptance angle and power loss due to bending of an opticalfibre.
3. Determination of energy gap of a given semiconductor by four probemethod
4. Study of I-V characteristics of P-N Junction diode, Zener diode
5. Characteristics of Photodiode andLED
6. Study of I-V characteristics of solar cell and to calculate fill factor andefficiency
7. Characteristics of Photocell
8. Hall's effect- determination of Hall'scoefficient
9. e/m of electron-Thomson'smethod
10. Seebeck Effect-determination of Seebeck coefficient
11. Helmholtz coil –calculation of magnetic field along theaxis
12. Study of resonance in LCR series & parallel circuits and to find resonant frequency & Q- factor

13. Michelson's interferometer-determination of wavelength of laserlight.

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

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
For day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18

Duration of Internal Test: 3 Hours

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAMMING FOR PROBLEM SOLVING LAB

SYLLABUS FOR B.E. I-SEMESTER
(Common to CSE, IT, ECE and EEE)

L:T:P (Hrs./week):0:0:2	SEE Marks : 50	Course Code :**U19ES121CS**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. Understand the fundamentals of programming in C Language 2. Write, compile and debug programs in C. 3. Formulate solution to problems and implement in C. 4. Effectively choose programming components to solve computing problems.	1. Choose appropriate data type for implementing programs in C language. 2. Design and implement modular programs involving input output operations, decision making and looping constructs. 3. Implement search and sort operations on arrays. 4. Apply the concept of pointers for implementing programs on dynamic memory management and string handling. 5. Design and implement programs to store data in structures and files.

Programming Exercise:

1. Finding maximum and minimum of given set of numbers, finding roots of quadratic equation.
2. Sin x and Cos x values using series expansion.
3. Conversion of binary to decimal, octal, hexadecimal and vice versa.
4. Generating Pascal triangle, pyramid of numbers.
5. Recursion: factorial, Fibonacci, GCD.
6. Matrix addition and multiplication using arrays, linear search and binary search using recursive and non-recursive procedures.
7. Bubble sort and selection sort.
8. Programs on pointers: pointer to arrays, pointer to functions.
9. Functions for string manipulations.

10. Programs on structures and unions.
11. Finding the number of characters, words and lines of given text file.
12. File handling programs.

Learning Resources:

1. Forouzan B.A & Richard F. Gilberg, A Structured Programming Approach using C, 3rd Edition(2013), Cengage Learning.
2. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, 2nd Edition (2006), Prentice-Hall.
3. Steve Oualline, Practical CProgramming,3rd Edition(2006),O'Reilly Press.
4. Balagurusamy E, Programming in ANSI C, 4th Edition(2008), TMG.
5. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical programming-in-c-january-iap-2010/syllabus/
6. http://nptel.ac.in/syllabus/syllabus.php?subjectId=106104128

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18
Duration of Internal Test: 2 Hours			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

BASIC ELECTRICAL ENGINEERING LAB

SYLLABUS FOR B.E I – SEMESTER (IT Branch)
SYLLABUS FOR B.E II – SEMESTER (CSE and ECE Branches)

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: **U19ES011EE**
Credits :1	CIE Marks:30	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES On completion of the course, students will be able to
1. To provide the practical knowledge on operation of DC, AC machines and circuits.	1. Handle the basic electrical equipments. 2. Find the various electrical parameters in DC and AC circuits. 3. Find the Efficiency of the DC and AC machines.

List of Experiments

1. Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Real-life resistors, capacitors and inductors.
2. Verification of Kirchoff's Voltage Law & Kirchoff's Current Law.
3. Verification of Superposition theorem and maximum power transfer theorems.
4. Verification of Thevenin's and Tellegen's theorems.
5. Sinusoidal steady state response of R-L and R-C circuits, Measurement of phase angle.
6. Measurement of cumulative three-phase power in balanced three-phase circuits.
7. Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor), synchronous machine (field winging - slip ring arrangement) and single-phase induction machine.
8. Torque Speed Characteristic of dc shunt motor.
9. Speed control of dc shunt motor.
10. Loading of a transformer: measurement of primary and secondary voltages and currents and power.

11. Torque-Slip Characteristic of a three phase induction motor.
12. Measurement of electrical energy consumption.
13. improvement of Power factor in R-L-C Circuits.

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

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18

Duration of Internal Test: 2 Hours

With effect from the Academic Year 2019-20 (R-19)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

SCHEME OF INSTRUCTION AND EXAMINATION (R-19)

B.E. – INFORMATION TECHNOLOGY : SECOND SEMESTER(2019 - 2020)

B.E (IT) II 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								
U19HS210EH	English Language and Communication – II	2	-	-	3	60	40	2
U19BS210MA	Engineering Mathematics – II	3	-	-	3	60	40	3
U19BS010CH	Engineering Chemistry	3	1	-	3	60	40	4
U19ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3
U19ES210IT	Basic Electronics	3	-	-	3	60	40	3
U19PC210IT	Introduction to Python Programming	1	-	2	3	60	40	2
PRACTICALS								
U19HS211EH	English Language and Communication Skills Lab – II	-	-	2	3	50	30	1
U19BS011CH	Chemistry Lab	-	-	2	3	50	30	1
U19ES021ME	Engineering Workshop	-	-	2	3	50	30	1
U19ES211IT	Basic Electronics Lab	-	-	2	3	50	30	1
Total		**15**	**1**	**10**	**--**	**560**	**360**	**21**
Grand Total		**26**				**920**		

Note:

1. One hour is allotted to Library / Sports / Personality Development Programme / Proctorial Interaction.

2. The left over hours are to be allotted to CC / RC / TC based on the requirement.

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

ENGLISH LANGUAGE AND COMMUNICATION-II

SYLLABUS FOR B.E. II SEMESTER
(Common to all branches)

L:T: P (Hrs/week):2:0: 0	SEE Marks: 60	Course Code: **U19HS210EH**
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. Identify words for use both in formal and informal contexts, to persuade and instruct and to inform. 2. Adapt and cooperate with people in varied contexts to function effectively, individually and in teams. 3. Communicate in interpersonal and intrapersonal contexts. 4. Read and write letters and essays etc. independently. 5. Write sustained piece of texts exhibiting qualities of coherence and cohesion.	1. Participate confidently in discussions both in the classroom and outside. 2. Work in teams, share ideas, agree and disagree politely. 3. Compose coherent letters, essays and resumes for varied situations. 4. Interpret and write a piece of text with coherence and cohesion. 5. Write paragraphs on any given topic following the rules of grammar and use appropriate vocabulary.

UNIT-1 1.0 Interpersonal Communication
1.1 Johari Window
1.2 Team building skills and teamwork
1.3 Persuasion techniques

UNIT-2 2.0 Speaking skills
2.1 Speaking strategies: - Making Power Point Presentations (research-oriented topics)

UNIT-3 3.0 Writing Practices
3.1 Précis Writing
3.2 Essay Writing-General and Creative
3.3 Email-etiquette
3.4 Request letters

3.5 Application letters and resume

UNIT-4 4.0 Advanced Remedial English and Vocabulary: - (In context)
4.1 Grammar-Active and Passive Voice; Subject-Verb agreement
4.2 Vocabulary: - Words often confused, One-word substitutes; Collocations, Phrasal verbs; Idiomatic usage.

UNIT-5 5.0 Reading skills and Comprehension
5.1 Getting acquainted with major type of questions
5.2 Prose text**-** Shiva Ayyadurai- The Inventor of the e-mail.
5.3 Poem by William Wordsworth - The World Is Too Much with Us

Learning Resources:

1. Essential English - E.Suresh Kumar, P. Sreehari, J. Savithri - Orient BlackSwan 2011.
2. Sunitha Mishra., C. Murali Krishna., Communication Skills for Engineers, Pearson, 2004.
3. Practical English Usage. Michael Swan. OUP. 1995.
4. Remedial English Grammar. F.T. Wood. Macmillan.2007
5. On Writing Well. William Zinsser. Harper Resource Book. 2001
6. Study Writing. Liz Hamp-Lyons and Ben Healy. Cambridge University Press. 2006.
7. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011. (vi) Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

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

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

Duration of Internal Tests : 90 Minutes

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

ENGINEERING MATHEMATICS-II

SYLLABUS FOR B.E.II-SEMESTER
(Common to all branches)

L:T:P(Hrs./week): 3:0:0	SEE Marks :60	Course Code: **U19BS210MA**
Credits :3	CIE Marks :40	Duration of SEE : 03 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. **Study** the concepts of matrices, Eigen values and Eigen vectors, Diagonalization and canonical form of a quadratic form. 2. **Solve** various first order differential equations using various elementary techniques and learn its applications. 3. **Solve** various Higher order homogeneous and non-homogeneous differential equations with constant and variable coefficients and applications. 4. **Understand** the Analytic functions, conditions and harmonic functions. 5. **Evaluate** a line integral of a function of a complex variable using Cauchy's integral formula, and how to evaluate Taylor's and Laurent Series.	1. **Find** rank of a given matrix, diagonalize a given matrix and reduce a quadratic form to canonical form and find its nature. 2. **Identify** the differential equations and solve them, model the real time electrical engineering problems viz., RC Circuits into differential equations and solve. 3. **Solve** various higher order Linear Differential Equations, model the real time electrical engineering problems viz., LC and LCR circuits into differential equations and solve them by using the various applicable techniques learnt. 4. **Apply** the condition(s) for a complex variable function to be analytic and/or harmonic and to construct an Analytic function. 5. **Apply** Cauchy's theorem and Cauchy's Integral formula to evaluate complex integrals and define singularities of a function, know the different types of singularities and to expand a given function as a Taylor's / Laurent's series.

UNIT-I:Matrices

Rank of a Matrix- Linearly independence and dependence of Vectors - Characteristic equation - Eigen values and Eigenvectors- Physical

significance 0f Eigen values - Cayley - Hamilton Theorem(without proof)- Diagonalization using Similarity Transformation.

UNIT-II:Ordinary Differential Equations of first order

Exact first order differential equations - Integrating factors- Linear first order equations -
Clairaut's Equation- Applications of First Order Differential Equations - Orthogonal trajectories
(Cartesian families) – LR and RC Circuits.

UNIT-III: Linear Differential equations

Solutions of Homogeneous and Non Homogeneous equations with constant coefficients- Method of Variation of Parameters –Applications of linear differential equations to LCR circuits

UNIT-IV: Complex Variables (Differentiation)

Limits and Continuity of function - Differentiability and Analyticity - Necessary & Sufficient Condition for a Function to be Analytic - Milne-Thompson's method -Harmonic Functions.

UNIT-V: Complex Integration

Complex Integration **-** Cauchy's Theorem - Extension of Cauchy's Theorem for multiply connected regions- Cauchy's Integral Formula - Power series - Taylor's Series - Laurent's Series (without proofs) -poles and Residues

Learning Resources:

1. Advanced Engineering Mathematics 3rd Edition, R.K.Jain & S.R.K.Iyengar, Narosa Publishing House.
2. Higher Engineering Mathematics 40th Edition Dr. B.S Grewal, Khanna Publishers.
3. A Text book of Engineering Mathematics, N.P.Bali & Manish Goyal, Laxmi Publications.
4. Advanced Engineering Mathematics, by Wylie & Barrett, Tata Mc Graw Hill, New Delhi.
5. Advanced Engineering Mathematics, 8th Edition by Erwin Kreyszig , John Wiley & Sons, Inc.
6. Ordinary and Partial Differential equations, by M.D.Raisinghania, S.Chand & Company Ltd.,1997.
7. Complex Variables and applications, J.W.Brown and R.V.Churchill, 7th Edition, Tata Mc Graw Hill,2004.
8. http://tutorial.math.lamar.edu/Classes/DE/DE.aspx

9. http://mathworld.wolfram.com/topics
10. http://www.nptel.ac.in/course.php

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

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

Duration of Internal Tests : 90 Minutes

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

ENGINEERING CHEMISTRY

SYLLABUS FOR B.E. I/II SEMESTER
(For CSE, ECE, EEE & IT Branches)

L:T:P(Hrs./week):3:1:0	SEE Marks :60	Course Code :**U19BS010CH**
Credits :4	CIE Marks :40	Duration of SEE :3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. To study variation of conductance, electrode potential and emf with change in concentration, temperature and to acquint with applications of galvanic cells. 2. To classify and compare various types of batteries. 3. Discuss the difference types of polymers with their applications. 4. To appraise few engineering materials.	1. Construct a galvanic cell and calculate its EMF and pH wherever applicable. 2. Describe the construction, functioning and applications of the selected primary, secondary batteries and fuel cells. 3. Catagorise the polymers and discuss the synthesis of a few polymers and their applications. 4. Get expose to basic concepts of engineering materials such as Composites and membranes. 5. Know the classification, properties, applications and types of liquid crystals &nano materials along with their synthesis.

UNIT-I: ELECTROCHEMISTRY

Introduction, conductance, types of conductance- specific, equivalent, molar conductance and their interrelationship- numericals. Ionic mobility and transport number- definition, determination by Hittorfs method (Non attackable electrodes) numericals. Principle and applications of conductometric titrations- strong acid *vs* strong base, week acid *vs* strong base and mixture of acids *vs* strong base.

Cells- electrolytic and electrochemical cells.IUPAC convention of cell notation, cell reaction, concept of electrode potential, electro motive force (EMF).Electrochemical series – applications, Nernst equation-derivation,

applications and numericals.Types of electrodes- construction and working of calomel electrode (CE), quinhydrone electrode and glass electrode (GE).Determination of pH using glass electrode and quinhydrone electrode. Applications of potentiometry- acid base and redox titration (Fe(II) Vs $KMnO_4$).

UNIT-II: BATTERY TECHNOLOGY

Introduction- definition of cell and battery – Types of cells (reversible and irreversible cells). Battery characteristics: free energy change, electromotive force of battery, power density, energy density- numericals. Primary, secondary and fuel cells.

Primary batteries: Construction and electrochemistry of Ag_2O-Zn battery and lithium-V_2O_5 battery.

Secondary batteries: Construction and working of lead-acid, Ni-Cd and lithium ion battery – advantages, limitations and applications.

Fuel cells: Concept, types of fuel cells and merits. Construction, working and applications of methanol-oxygen and phosphoric acid fuel cell.

UNIT-III: POLYMER CHEMISTRY

Introduction, degree of polymerization, functionality of monomers and its effect on the structure of polymers.Classification of polymers-a) homo and co-polymers, b) homo chain and hetero chain polymers. c) plastics, elastomers, fibers and resins.

Types of Polymerization - Addition and condensation polymerization.

Glass transition temperature (Tg), factors affecting Tg.

Molecular weight- number average and weight average molecular weight, numericals.

Plastics: Thermo plastics and thermosets - preparation, properties and applications of a) Aramid (Kevlar) b) Phenol-formaldehyde (Bakelite) c) PVC

Elastomers: Natural rubber- structure – chemistry of vulcanization and advantages.

Artificial rubbers: Preparation, properties and uses of Buna-S and silicone rubbers.

Biodegradable polymers: Concept, preparation and uses of ploy lactic acid.

Conducting polymers: Definition- classification, mechanism of conduction in polyacetylene and applications.

UNIT-IV: ENGINEERING MATERIALS

a. Composite materials:

Introduction, constituents of composites, advantages over conventional materials. Applications of composites. Types of composites based on matrix and dispersed phases. Manufacturing techniques – Hand lay up method-RTM, pull trusion methods.

Fiber reinforced composites: glass, carbon and aramid reinforced composites. Layered composites-applications.

b. Membrane technology

Introduction, classification- symmetric, asymmetric, electrically charged and liquid membranes.Working principle of membrane, advantages of membrane separation over conventional separation. Casting methods: phase inversion and solvent evaporation methods, synthesis of polyphenyleneoxide, polyethersulphone and membrane casting. Industrial applications of membranes- gas separation, pervaporation, elecetrodialysis, reverse osmosis, micro, ultra and nano filtration.

UNIT-V: ADVANCED ENGINEERING MATERIALS

a. Nano Materials

Introduction - concept of nanomaterials - quantum confinement and surface volume ratio - catalytic property and mechanical properties.

Types of Nanomaterials**: c**arbon nano tubes**,** quantum dots, nanowires, nano crystals.

Synthesis of nano materials: top down and bottom up approaches**-** mechanical grinding by ball milling, sol gel method.

Carbon Nanotubes**:**single walled carbon nanotubes (SWCNTs). Multi walled carbon nanotubes (MWCNTs), synthesis of CNTs- arc discharge and laser ablation methods, applications.

b. Liquid Crystals

Introduction, classification of liquid crystals-Thermotropic and Lyotropic liquid crystals - Chemical constitution & liquid crystalline behavior.Molecular ordering in liquid crystals- Nematic, Smectic and Cholestric liquid crystals - Applications.

Learning Resources:

1. PC Jain, M Jain Engineering Chemistry, DhanapathiRai and sons (16th edition), New Delhi.
2. SashiChawla, Text book of Engineering Chemistry, DhanapathiRai&sons, New Delhi.
3. O.G. PALANNA, Engineering Chemistry, TMH Edition.
4. Wiley Engineering chemistry, Wiley India pvt Ltd, II edition.
5. Chemistry in engineering and technology by J.C. Kuriacose and Rajaram.

6. University chemistry, by B. H. Mahan
7. Engineering Chemistry (NPTEL Web-book), by B. L. Tembe, Kamaluddin and M. S. Krishnan
8. Physical Chemistry, by P. W. Atkins
9. S. S. Dara, S Chand and sons, Engineering Chemistry, New Delhi.
10. Puri, Sharma and Pathania Principles of physical chemistry, Vishal Publishing Co.
11. NPTEL Polymer Chemistry Course, D. Dhara, IIT Kharagpur.
12. Polymer chemistry by Gowariker
13. Introduction to Nano science, by S m Lindsay, Oxford University press

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

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

Duration of Internal Tests : 90Minutes

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

BASIC ENGINEERING MECHANICS

SYLLABUS FOR B.E. II SEMESTER
(Common to CSE, ECE & IT)

L:T:P(Hrs./week):3:0:0	SEE Marks:60	Course Code:**U19ES010CE**
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. Explain the resolution of a system of forces (coplanar, spatial, concurrent, non-concurrent) and compute their resultant. 2. Solve particle equilibrium problem using equation of equilibrium 3. Determine forces in the members of a truss 4. Perform analysis of bodies lying on rough surfaces. 5. Locate the centroid of a body and also compute the area moment of inertia of standard and composite sections.	1. Determine resultant of forces acting on a body. 2. Analyse equilibrium of a body subjected to a system of forces. 3. Perform analysis of trusses using method of joints and method of sections. 4. Solve problem of bodies subjected to friction. 5. Find the location of centroid and calculate moment of inertia and polar moment of inertia of a given section.

UNIT-I

ForceSystems: Rectangular components, moment, couple and resultant of two dimensional and three dimensional force systems.

UNIT-II

Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of planar and spatial system.

UNIT-III

Determinate Trusses: Analysis of planetrusses like warren girder, Pratt truss, fink truss etc using method of joints and method of sections.

UNIT-IV

Friction: Lawsoffriction.Applicationtosimplesystems,Connectedsystemsand beltfriction, Wedgefriction.

UNIT-V

Centroid and Moment of Inertia: Centroids of lines, areas and volumes, Moment of inertia of areas, Composite areas, Polarmoment of inertia, Radius of gyration.

Learning Resources:

1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2011.
2. Timoshenko S.P and Young D.H *"Engineering Mechanics",* McGraw Hill International Edition, 2017
3. Andrew Pytel., Jaan Kiusalaas., *"Engineering Mechanics",* Cengage Learning, 2014.
4. Beer F.P & Johnston E.R Jr. Vector *"Mechanics for Engineers"*, TMH, 2004.
5. Hibbeler R.C & Ashok Gupta*, "Engineering Mechanics",* Pearson Education, 2010.
6. Tayal A.K., *"Engineering Mechanics – Statics & Dynamics"*, Umesh Publications, 2011.
7. Basudeb Bhattacharyya., *"Engineering Mechanics",* Oxford University Press, 2008.
8. Meriam. J. L., *"Engineering Mechanics",* Volume-I Statics, John Wiley & Sons, 2008.
9. NPTEL Course (www.nptel.ac.in)
10. Virtual labs (www.vlab.co.in)

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

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

Duration of Internal Tests : 90 Minutes

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

BASIC ELECTRONICS
SYLLABUS FOR II-SEMESTER

L:T:P(Hrs./week): 3:0:0	SEE Marks :60	Course Code:**U19ES210IT**
Credits : 3	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
Identify different electronic devices, their characteristics and use them in building simple electronic circuits.	1. Design simple circuits like rectifiers, voltage regulators, clipping and clamping circuits for the given specifications based on the operating principles of the diode. 2. Analyze different bipolar junction transistor circuits to determine Input impedance, output impedance, Voltage gain, current gain using exact and approximate h parameter models. 3. Verify the implementation of simple Boolean functions using CMOS circuits with the help of Truth table indicating the different transistors ON/OFF conditions. 4. Determine the kind of feedback used in a given negative feedback amplifier circuit and determine the frequency of oscillation of Hartley, Colpitt and RC phase shift oscillators. 5. Analyze simple operational amplifier circuits to determine the voltages at specific points in the circuit and design simple operational amplifier circuits for given application.

UNIT – I: Diodes:
PN junction diode, Biasing, Zener diodes, Rectifier Circuits, Limiting and clamping circuits, Schottky Barrier diode and Varactor diode.

UNIT – II: Bipolar Junction Transistors:

Bipolar junction transistors –characteristics, analysis of transistor circuits at DC, , biasing, transistor as amplifier, effect of emitter bypass capacitance, h-parameter model of BJT, approximate analysis of BJT circuits using h-parameter model, transistor as switch, internal capacitance. Pi equivalent circuit, low frequency and high frequency operation, thermal run away

UNIT – III: Field Effect Transistors:

MOSFET current-voltage characteristics, MOSFET as an amplifier and as a switch,

Digital CMOS logic circuits: Introduction, digital IC technologies and logic circuit families, Voltage Transfer Characteristic (VTC) of inverter, Noise Margins, Propagation delay, static and dynamic operation of CMOS inverter. CMOS logic gate circuits: Basic structure (PUN and PDN), Implementation of 2-input NOR gate, NAND gate, complex gates and exclusive OR gate.

UNIT – IV: Feedback Amplifiers and Oscillators

Feedback – Structure, Properties of negative feedback, Topologies, Advantages of negative feedback amplifiers Sinusoidal Oscillators – Loop gain, Barkhausen criteria, RC Phase shift, LC and Crystal Oscillators.

Power Amplifiers: class A, B and C amplifiers.

UNIT – V: Operational Amplifiers:

Operational Amplifiers: Ideal characteristics, op. amp. as adder, Subtractor, Integrator, differentiator and comparator using op. amp. generation of square and Triangular waveforms, Monostable multi vibrator.

Op. Amp. As Voltage –controlled current switch(VCCS), Current-controlled Voltage source(CCVS), Instrumentation Amplifier, antilogarithmic amplifiers and analog multipliers.

Learning Resources :

1. Jacob Millman, Christos C Halkais, Satybrata jit, Electronic Devices and Circuits,Mc Graw Hill India Private Ltd, 3rd Edition
2. Adel S. Sedra, Kenneth C. Smith, Microelectronic Circuits, 5th Edition, Oxford International Student Edition, 2006
3. D. Roy Choudhury, Shail B. Jain, Linear Integrated Circuits, New Age International Publishers, 4th Edition.

4. Jocob Millman, Arvin grable – Micro Electronics – 2nd Edition, McGraw Hill 1987.
5. Donald L. Schilling, Charles Belove, Electronic Circuits Discrete and Integrated, Tata Mc Graw Hill Education, 3rd Edition
6. https://nptel.ac.in/courses/117103063/

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

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

Duration of Internal Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERBAD-500031,
DEPARTMENT OF INFORMATION TECHNOLOGY

INTRODUCTION TO PYTHON PROGRAMMING

SYLLABUS FOR B.E. II SEMESTER

L:T:P (Hrs./week): 1:0:2	SEE Marks :60	Course Code : **U19PC210IT**
Credits : 2	CIE Marks :40	Duration of SEE : 3 Hours

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

Unit – I

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

Unit – II

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

Unit – III

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

Unit – IV

Modules , Classes and Objects, is – a relationship : inheritance, has-a relationship : composition. 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	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB-II
SYLLABUS FOR B.E. II SEMESTER
(Common to all branches)

L:T:P(Hrs/Week):0:0:2	SEE Marks: 50	Course Code: **U19HS211EH**
Credits: 1	CIE Marks: 30	Duration of SEE: 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. Use language effectively without mother -tongue influence. 2. Converse in various situations. 3. Make poster and power point presentations. 4. Listen to audio clippings, exchange dialogues and write short texts. 5. Speak effectively using discourse markers. 6. Read and understand various forms of texts and review them.	1. Pronounce words in isolation as well as in spoken discourse. 2. Research and sift information to make presentations. 3. Comprehend the tone and tenor of various types of speeches from media and classroom lectures. 4. Listen for gist and make inferences from various speeches. 5. Identify connectives and transitions in various speeches. 6. Use connectives and make transitions effectively while speaking.

1.0 PHONETICS LAB- TOPICS

1.1 Aspects of Connected Speech:
Passages and dialogue reading.

1.2 Word Stress:
Rules of Word stress and Sentence stress

1.3 Rhythm and Intonation:
Introduction to rhythm and intonation; Major patterns of intonation in English with their semantic implications. Transcription.

Viva questions will be asked in internal and external exams.

2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS (Advanced Level)

2.1 Public Speaking:

Advantages of public speaking, essentials of an effective speech, researching, planning and delivering a speech.

2.2 Presentation Skills:

Making Effective Presentations, Expressions which can be used in Presentations, Use of Non-verbal communication, Coping with stage-fright, Handling Question and Answer Session; Use of Audio-Visual Aids, PowerPoint Presentations.

2.3 Interview skills-

Do's and Don'ts, Handling difficult questions, dress code and code of conduct. Viva questions will be asked in internal and external exams.

3.0 READING SKILLS LAB

Study Skills:

Use of Dictionary and the thesaurus for vocabulary building.
Teaching different types of texts for comprehension
Viva questions will be asked in internal and external exams.

Learning Resources:

1. Speak Well: Jayshree Mohanraj, Kandula Nirupa Rani and Indira Babbellapati - Orient BlackSwan.
2. T. Balasubramanian: A textbook of English Phonetics for Indian students, Macmillan, 2008.
3. Priyadarshini Patnaik : Group discussion and Interviews, Cambridge University Press India Private Limited 2011.
4. Daniel Jones: Cambridge English Pronouncing Dictionary - A definitive guide to contemporary English Pronunciation Reading Cards (Eng400): Orient Black Swan.

No. of Internal Tests:	01	Max. Marks for Internal Test:	30
Duration of Internal Test:	2 Hours		

VASAVI COLLEGE OF ENGINEERING (Autonomous)
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DEPARTMENT OF CHEMISTRY

CHEMISTRY LAB
SYLLABUS FOR B.E. I/II SEMESTER
(Common for All Branches)

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: **U19BS011CH**
Credits :01	CIE Marks:30	Duration of SEE:03Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. To describe the conventional quantitative analytical techniques. 2. Learn the working principles of instruments. 3. To familarise preparation method of few compounds.	1. Determine the amount of metals in the given solutions. 2. Analyse the hardness, alkalinity and chloride content of a given water sample. 3. Estimate the amount of a substance in a given solution by conductometry, potentiometry and pH metry. 4. Use the principle of colorimetry in the estimation of Permanganate / Copper (II) in a given solution. 5. Synthesize a polymer.

List of the Experiments:

1. Preparation of standard FAS or oxalic acid solution and standardization of $KMnO_4$ or NaOH solution.
2. Estimation of ferrous iron in the given solution by permanganometry.
3. Estimationof chromium in the given solution by standardized FAS.
4. Estimation of copper in brass or given solution by hypo.
5. Estimationof available chlorine in bleaching powder.
6. Estimation of total hardness of given water sample.
7. Estimation of alkalinity of a given sample.
8. Conductometric acid-base titrations –Determination of strength of given acids (Hcl *Vs*NaOH and CH_3COOH *Vs*NaOH).
9. Conductometric acid-base titrations- Determination of strength of acids in a given mixture of acids

1. (HCl and CH_3COOH *Vs*NaOH)

10. Determination of strength of a given acid by Potentiometry.
11. Determination of concentration of a given $FeSO_4$ using redox titration by Potentiometry.
12. Determination of strength of a given acid by pH metry.
13. Determination of strength of permanganate or copper in brass solution by Colorimetry.
14. Determination of concentration of a salt by ion exchange method.
15. Synthesis of Aspirin or Phenol formaldehyde resin.

Learning Resources:

1. G H Jeffery, J Bassett, J Mendham, R C Denney, Vogel's text book of quantitative chemical analysis, Fifth Edition.
2. M S Kaurav, Engineering chemistry with laboratory experiments, PHI learning (P) ltd, New Delhi.
3. Sunita rattan, Experimenta in applied chemistry, S K Kataria& Sons (2010)
4. A text book on experiments and calculation Engg. S.S. Dara.

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

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18

Duration of Internal Test: 3 Hours

VASAVI COLLEGE OF ENGINEERING (Autonomous)
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DEPARTMENT OF MECHANICAL ENGINEERING

ENGINEERING WORKSHOP

SYLLABUS FOR B.E.II-SEMESTER
(Common to CSE & IT Branch)

L:T:P(Hrs/week):0:0:2	SEE Marks:50	Course Code: **U19ES021ME**
Credits :01	CIE Marks:30	Duration of SEE:03Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. know basic workshop processes,adopt safety practices while working withvarious tools 2. identify, select and use various marking, measuring, holding, striking and cutting tools &equipments.	1. create models in Carpentry, Fitting, Electrical & Electronics and Sheet metal trades by using the relevant tools. 2. measure and Inspect the finished components using suitable measuring instruments. 3. apply basic electrical and electronics engineering knowledge to make simple electrical circuits and check their functionality along with practice in soldering of electronic components.

List of the Experiments:

FITTING

1. Template fitting (square fit)
2. V-groove fit
3. Drilling and Tapping
4. Assembly of pulley on a shaft with key(demo)

ELECTRICAL & ELECTRONICS

1. Two lamps in(a)series(b) parallel with 3 pin plug and switches
2. Staircase wiring and Tube light wiring
3. (a) Identification of electronic components
   (b) Soldering practice
4. LT Distribution with loads (Demo)

CARPENTRY

1. Half-lap joint
2. Dove-tail joint
3. Bridle joint
4. Wood turning operation (demo)

SHEET METAL

1. Rectangular Box
2. Rectangular scoop with handle
3. Making a Funnel with soldering
4. Making a T-Joint (Demo).

PLASTIC MOULDING

1. Injection moulding of plastic spoon (demo)

Learning Resources:

1. Hajra Choudhury S.K., Hajra Choudhury A.K., Nirjar Roy S.K. "Elements of Workshop Technology" Vol-I 2008 & Vol-II 2010 Media Promoters & Publishers Pvt. Limited, Mumbai.
2. Kalpakjian S. and Steven S. Schmid, "Manufacturing Engineering and Technology" 4th Edition, Pearson Education India Edition, 2002.
3. Gowri P., Hariharan and Suresh Babu A., "Manufacturing Technology-I", Pearson Education 2008.
4. P. Kannaiah & K. L. Narayana "Workshop manual" 2nd Ed., Scitech publications (I) Pvt. Ltd., Hyderabad.
5. B.L. Juneja, "Workshop Practice", Cengage Learning India Pvt. Limited, 2014.
6. www.technologystudent.com

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Day-to-day laboratory class work which will be awarded based on the average of assessment for each experiment considering at the end of the course			18

Duration of Internal Test: 2 Hours

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DEPARTMENT OF INFORMATION TECHNOLOGY

BASIC ELECTRONICS LAB
SYLLABUS FOR B.E. II SEMESTER

L:T:P(Hrs./week): 0:0:2	SEE Marks :50	Course Code:**U19ES211IT**
Credits : 1	CIE Marks :30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
Identify the different electronic devices and use them in building different application circuits.	1. Identify and use different electronic devices and measuring equipments. 2. Use PN diode, Zener diode for applications like rectifiers, clipping and clamping circuits and voltage regulators. 3. Use BJT transistor in the design of amplifier circuit. 4. Implement different types of oscillator circuits. 5. Use operational amplifier for different applications and verify the operation of different digital circuits.

ANALOG:

1. CRO and its applications: Measurement of amplitude, frequency.
2. Characteristics of pn junction diode ,
3. Characteristics of zener diode.
4. Zener diode as a Voltage Regulator
5. Half-wave Rectifier,
6. Full-wave rectifier
7. Clipping Circuits
8. Clamping Circuits
9. Characteristics of Common Emitter Transistor configuration
10. Characteristics of Common Base Transistor configuration
11. Frequency response of Common Emitter amplifier
12. RC phase shift oscillators
13. Operational Amplifier as an adder, subtractor, and comparator

DIGITAL:

1. Truth table verification of logic gates using TTL 74 series ICs.
2. Implementation of Half Adder, Full Adder
3. Verification of Multiplexer Operation.
4. Implementation of Boolean logic using decoders and MUXes.
5. Truth table verification of D flip flop, T flip-flop and JK flip-flop

Learning Resources :

1. Paul B Zbar and Alber P Malvino, Michael A Miller, "Basic Electronics: A Text Lab Manual", 7th edition, Tata McGraw Hill, 2009.
2. David A Bell, "Laboratory Manual for Electronic Devices and Circuits", 4th edition, PHI, 2001.
3. Muhammed H Rashid, "SPICE for circuits and electronics using PSPICE", 2nd edition, PHI, 1995.
4. Mithal. G.K, "Practicals in Basic Electronics", G K Publishers Private Limited, 1997.
5. Maheswari. L.K and Anand.M.M.S, "Laboratory Manual for Introductory Electronic Experiments", New Age, 2010.
6. PoornachandraRao.S and Sasikala.B, "Handbook of Experiments in Electronics and Communication Engineering", Vikas publishers, 2003
7. http://www.nptelvideos.in/2012/11/basic-electronics-prof-tsnatarajan.html

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Duration of Internal Test: 2 Hours