

**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. (CSE) III and IV Semesters
With effect from 2019-20
(For the batch admitted in 2018-19)
(R-18)**



**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
Phones: +91-40-23146020, 23146021
Fax: +91-40-23146090**

Institute Vision

Striving for a symbiosis of technological excellence and human values

Institute Mission

To arm young brains with competitive technology and nurture holistic development of the individuals for a better tomorrow

Department Vision

To be a center for academic excellence in the field of Computer Science and Engineering education to enable graduates to be ethical and competent professionals.

Department Mission

To enable students to develop logic and problem solving approach that will help build their careers in the innovative field of computing and provide creative solutions for the benefit of society.

B.E (CSE) Program Educational Objectives (PEO's)

Graduates should be able to utilize the knowledge gained from their academic program to:

PEO I	Solve problems in a modern technological society as valuable and productive engineers.
PEO II	Function and communicate effectively, both individually and within multidisciplinary teams.
PEO III	Be sensitive to the consequences of their work, both ethically and professionally, for productive professional careers.
PEO IV	Continue the process of life-long learning.

B.E. (CSE) PROGRAM OUTCOMES (PO's)	
Engineering Graduates will be able to:	
PO1	Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
P11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
P12	Lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

With effect from the Academic Year 2019-20

B.E (CSE) PROGRAM SPECIFIC OUTCOMES (PSO's)	
PSO I	Graduates will have knowledge of programming and designing to develop solutions for engineering problems.
PSO II	Graduates will be able to demonstrate an understanding of system architecture, information management and networking.
PSO III	Graduates will possess knowledge of applied areas of computer science and engineering and execute them appropriately.

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-18)

B.E. – COMPUTER SCIENCE & ENGINEERING : III SEMESTER (2019 - 2020)

B.E (CSE) III 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								
U18HS330EH	Skill Development: Communication Skills in English – I	2		-	3	60	40	2
U18HS010EH	Human Values and Professional Ethics-I	1	-	-	2	40	30	1
U18BS320MA	Transform Techniques, Probability and Statistics	3	-	-	3	60	40	3
U18PC310CS	Logic & Switching Theory	3	-	-	3	60	40	3
U18PC320CS	Data Structures	3	-	-	3	60	40	3
U18PC330CS	Object Oriented Programming	3	-	-	3	60	40	3
U18PC340CS	Discrete Structures	3	-	-	3	60	40	3
U18OE3XXXX	Open Elective-I	2	-	-	3	60	40	2
U18MC310ME	Introduction to Entrepreneurship	1	-	-	2	40	30	-
PRACTICALS								
U18PC321CS	Data Structures Lab	-	-	2	3	50	30	1
U18PC331CS	Object Oriented Programming Lab	-	-	2	3	50	30	1
TOTAL		21	0	4		600	400	22
GRAND TOTAL		25				1000		
Student should acquire one online certification course during III Semester to VII Semester								
Left over hours are allocated for Extra Curricular Activities / Co-Curricular Activities / Sports / Library / Proctorial Interaction / CC / RC / TC								

I. Attendance and Sessional marks requirements:

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

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

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

		SEM
		c. Passed in all the courses of III and IV SEMs
		d. Must have secured at least 50% of total credits prescribed for V and VI SEMs put together
7	VII-SEM to VIII-SEM	a. Regular course of study of VII SEM b. 40% aggregate CIE marks in VII SEM
8	Eligibility to appear VIII-SEM exams	a. Regular course of study of VIII SEM and 40% aggregate CIE marks in VIII-SEM

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

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

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Humanities and Social Sciences

COMMUNICATION SKILLS IN ENGLISH-I

SKILL DEVELOPMENT COURSE: I

SYLLABUS FOR BE -III SEMESTER

(COMMON FOR ALL BRANCHES)

L :T:P(Hrs/Week) : 2:0:0	SEE Marks: 60	Course Code: UI8HS330EH
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

Course Overview:

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

Course Objective:

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

Overview of the delivery Methodology:

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

With effect from the Academic Year 2019-20
language enhancement and will be given extra reading and writing
exercises

Unit1 – Fundamentals of Communication

Unit Overview:

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

Learning Outcome:

The students should be able to:

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

Competencies:

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

Sessions:

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

Unit 2 - Narrations and Dialogues

Unit Overview:

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

Learning Outcome:

The students should be able to

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

Competencies:

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

Sessions:

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

Unit 3 - Rational Recap

Unit Overview:

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

Learning Outcome:

The students should be able to:

With effect from the Academic Year 2019-20

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

Competencies:

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

Sessions:

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

Unit 4: Technical Expositions and Discussions

Unit Overview:

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

Learning Outcome:

The students should be able to:

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

Competencies:

- Comprehending key points of a topic and note main points including supporting details.
- Construct a logical chain of arguments and decisive points.
- Writing a review about a product by providing reasons, causes, and effects

Sessions:

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

Unit 5: Drawing Conclusions

Unit Overview:

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

Learning Outcome:

Students should be able to:

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

Competencies:

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

Sessions:

1. Reasoning
2. Analyzing
3. Generalization and Prediction

Students are given workbooks prepared by Talent sprint.

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

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

SYLLABUS FOR B.E- III SEMESTER
(COMMON FOR ALL BRANCHES)

L: T: P(Hrs/Week): 1:0:0	SEE Marks: 40	Course Code: U18HS010EH
Credits: 1	CIE Marks: 30	Duration of SEE: Hours: 02

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of this course the student 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. Gain a world view of the self, the society and the profession. 2. Start exploring themselves in relation to others and their work – constantly evolving into better human beings and professionals. 3. Inculcate Human values into their profession. 4. Obtain a holistic vision about value-based education and professional ethics.

UNIT-1 Understanding the need and process for Value Education

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

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

UNIT-2 Holistic Understanding of Professional Ethics and Human Values

2.1 At the level of individual: as socially and ecologically responsible

With effect from the Academic Year 2019-20

engineers and technologists.

2.2 At the level of society: as mutually enriching organizations, being work conscious

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

Learning Resources:

1. PL Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
2. B.L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.
3. A.N Tripathy, 2003 Human values, New Age International Publishers.
4. EG Seebauer & Robert L. Berry, 2000, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press.

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

1 No. of Internal Tests : 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 Tests : 1 Hour 30 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mathematics

TRANSFORM TECHNIQUES, PROBABILITY & STATISTICS

SYLLABUS FOR B.E. III-SEMESTER

L :T:P(Hrs./week): 3:0:0	SEE Marks :60	Course Code: U18BS320MA
Credits :3	CIE Marks :40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES On completion of the course, students will be able to
1 Study the Fourier series, conditions for expansion of function and half range series	1 Expand any function which is continuous, Discontinuous, even or odd in terms of its Fourier series.
2 Study the concept of Fourier, Sine, Cosine and inverse Fourier Transform Sine and Cosine transform of a function and various properties.	2 Determine Fourier transform, Fourier sine and cosine transform and inverse Fourier, Sine and Cosine transform of a function.
3 Study various methods of testing large samples	3 Infer properties of population conducting tests on samples
4 Analyze standard statistical tests employed for small samples	4 Categorize population based on tests on small samples
5 Understand fitting of a straight line to a given data and measuring Correlation between variables	5 Solve problems on fitting of a straight line to the given data and also to find co-efficient of correlation and to determine regression lines and their application problems.

UNIT-I: 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-II: Fourier Transforms:

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

UNIT-III: Probability:

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

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.

UNIT-V: Regression & Correlation :

The Method of Least Squares - Fitting of Straight line- Regression - Lines of Regression- Correlation – Karl Pearson’s Co-efficient of Correlation

Learning Resources:

1. R.K. Jain & S.R.K. Iyengar, Advanced Engineering Mathematics, Third Edition, Narosa Publications, 2007.
2. Higher Engineering Mathematics, Dr.B.S Grewal 40th Edition, Khanna Publishers.
3. Advanced Engineering Mathematics, Kreyszig E, 8 th Edition, John Wiley & Sons Ltd, 2006.
4. A text book of Engineering Mathematics by N.P.Bali & Manish Goyal, Laxmi Publication.
5. Fundamentals of Mathematical Statistics, Gupta & Kapoor, Sultan chand & sons, New Delhi.

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

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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 Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2019-20

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

Department of Computer Science & Engineering

LOGIC AND SWITCHING THEORY

SYLLABUS FOR B.E. III-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks: 60	Course Code: U18PC310CS
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 use of logic minimization methods and to solve the Boolean logic expressions.	1 Apply Boolean logic postulates and Karnaugh-Map to simplify Boolean expressions.
2 Design combinational and sequential circuits.	2 Apply tabulation method to minimize Boolean expressions. 3 Design combinational circuits such as adders, encoders and multiplexers. 4 Design sequential circuits like counters and registers. 5 Design a circuit using programmable logic devices.

UNIT-I: Boolean Algebra:

Axiomatic definition of Boolean Algebra, Postulates and Theorems, Boolean Functions, Canonical Forms and Standard Forms, Simplification of Boolean Functions Using Theorems and Karnaugh Map Method.

UNIT-II:

Minimization of Switching Functions: Quine-McCluskey Tabular Method, Determination of Prime Implicants and Essential Prime Implicants.

Implementation of Boolean Functions: Single-Output and Multiple-Output Combinational Circuit Design, AND-OR, OR-AND and NAND & NOR Realizations, Exclusive-OR and Equivalence functions.

UNIT-III:

Design of Combinational Logic Circuits: Analysis Procedure, Design Procedure, Modular Combinational Logic Elements- Decoders, Encoders, Priority Encoders, Multiplexers and De-multiplexers.

Design of Integer Arithmetic Circuits using Combinational Logic: Integer Adders – Binary Adders, Subtractors, Ripple Carry Adder and Carry Look Ahead Adder, and Carry Save Adders.

UNIT-IV:

Introduction to Sequential Circuit Elements: Latches, Various types of Flip-Flops, Excitation Tables.

Models of Sequential Circuits: Moore Machine and Mealy Machine, Analysis of Sequential Circuits-State Table and State Transition Diagrams. Design of Sequential Circuits-Counters. Moore and Mealy State Graphs for Sequence Detection, Methods for Reduction of State Tables and State Assignments.

UNIT-V:

Design of Combinational Circuits using Programmable Logic Devices (PLDs): Read Only Memory (ROM), Programmable Logic Array (PLA), Programmable Array Logic (PAL) devices.

Learning Resources:

1. Morris Mano M and Michael D Ciletti, Digital Design, 4th Edition (2008), Prentice Hall of India.
2. ZviKohavi, Switching and Finite Automata Theory, 2nd Edition(1978), Tata McGraw Hill.
3. Charles H. Roth, Jr., Larry L. Kenny, Fundamentals of Logic Design, 7th Edition(2013), Cengage Learning.
4. Anand Kumar A, Switching Theory and Logic Design, 2nd Edition(2014), PHI Publishers.
5. CH Roth , Fundamentals of Logic Design, 4th Edition(2006), Jaico Publishers.
6. <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-111-introductory-digital-systems-laboratory-spring-2006/>
7. <http://www.facweb.iitkgp.ernet.in/~isg/SWITCHING/>

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 Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2019-20

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

Department of Computer Science & Engineering
DATA STRUCTURES

SYLLABUS FOR B.E. III-SEMESTER

L:T:P (Hrs./week):3:0:0	SEE Marks: 60	Course Code: U18PC320CS
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 Identify and use appropriate data structure for a given problem with effective utilization of space and time. 2 Describe the linear and nonlinear data structures. 3 Analyze the complexities of different sorting techniques. 	<ol style="list-style-type: none"> 1 Compute time and space complexities of Algorithms. Design a solution to a given problem using arrays. 2 Develop applications using stacks, queues and linked lists. 3 Choose the appropriate nonlinear data structure and perform operations on them. 4 Choose suitable sorting technique to maximize the performance of the solution. Select the hashing technique to perform dictionary operations. 5 Explain operations on Efficient Binary Search Trees and Multiway Search Trees.

UNIT-I:

Basic concepts: Algorithm Specification- Introduction, Recursive algorithms, Data Abstraction, Performance analysis- time complexity and space complexity, Asymptotic Notation-Big O, Omega and Theta notations.

Arrays: Arrays - ADT, Polynomials, Sparse matrices, Strings-ADT, Pattern Matching.

UNIT-II:

Stacks and Queues: Stacks, Stacks using dynamic arrays, Queues, Circular Queues using dynamic arrays, A Mazing Problem, Evaluation of Expressions – Evaluating Postfix Expression, Infix to Postfix.

With effect from the Academic Year 2019-20

Linked Lists: Singly Linked Lists and Chains, Linked Stacks and Queues, Polynomials, Operations for Circularly linked lists, Equivalence Classes, Sparse matrices, Doubly Linked Lists.

UNIT-III:

Trees: Introduction, Binary Trees, Binary Tree Traversals, Heaps, Binary Search trees (BST): Definition, Searching a BST, Insertion into a BST, Deletion from a BST.

Graphs: The Graph ADT, Elementary graph operations, Minimum Cost Spanning Trees- Kruskal's Algorithm, Prim's Algorithm.

UNIT-IV:

Sorting: Insertion Sort, Quick sort, Merge sort, Heap sort, Sorting on Several Keys, List and Table Sorts.

Hashing :Introduction, Static Hashing: Hash tables, Hash functions, Overflow handling.

UNIT-V:

Efficient Binary Search Trees: AVL Trees, Red-Black Trees, Splay Trees.

Multiway Search Trees: m-way search trees-Definition and properties, Searching an m-way search tree, B-Trees-Definition and properties, Number of Elements in a B-Tree, Insertion into a B-Tree and Deletion from a B-Tree.

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, 2nd 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 Tests : 1 Hour 30 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

OBJECT ORIENTED PROGRAMMING

SYLLABUS FOR B.E. III-SEMESTER

L:T:P(Hrs./week): 3:0:0	SEE Marks: 60	Course Code: U18PC330CS
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 Apply object oriented principles for developing an application using Java constructs. 2 Design model view and controller enabled Java application.	1. Apply the object oriented programming concepts to solve a problem 2. Employ runtime error handling, concurrent programming practices to develop a parallel processing application 3. Apply I/O operations using console and file streams to develop an interactive Java application. 4. Design a utility using the collection framework 5. Develop an event driven application using AWT and Swing packages.

UNIT-I:

Object Oriented System Development: Understanding Object Oriented Development, Understanding Object Concepts, Benefits of Object Oriented Development.

Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control Statements, Classes and Methods, Garbage Collection, this keyword, final, Inheritance, Method Overriding.

UNIT-II: Singleton class, Abstract class, Nested class, Interface, Package. Exception Handling, Multithreaded Programming, String Handling.

UNIT-III:

Java.lang: Type Wrapper, Process, Runtime, Object class, Generics

IO:Java I/O Classes and Interfaces, Files and Directories, Byte and Character Streams, Serialization.

Regular Expressions: Pattern, Matcher, Regular expression Syntax

UNIT-IV: Collections:

Overview, Collection Interfaces, Collection Classes, Iterators, List, Set, Maps, Comparator, Arrays, Legacy Classes and Interfaces, StringTokenizer, BitSet, Date, Calendar, Random, Observable, Timer.

UNIT-V:

GUI and event Programming: Applet Class, Applet architecture, The Delegation Event Model, Event Classes, Source of Events, Events Listener Interfaces, Working with Graphics, Layout Managers.

Java Swing: Basics of Swing, Difference between AWT & Swing, MVC Architecture, Components and Container, Swing Components.

Learning Resources:

1. Herbert Schildt, The Complete Reference Java, 7th Edition, Tata McGraw Hill 2005.
2. James M Slack, Programming and Problem Solving with JAVA, Thomson Learning 2002.
3. Timothy Budd, An introduction to Object-Oriented Programming, 3rd Edition, Pearson Education, 2008
4. C Thomas Wu, An Introduction to Object Oriented Programming with Java, Tata McGraw Hill, 2005.
5. P. Radha Krishna, Object Oriented Programming through Java, Universities Press, 2007.
6. Sachin Malhotra, Saurabh Choudhary, Programming in Java, 2nd Edition, Oxford Press, 2014.
7. <https://docs.oracle.com/javase/tutorial/java>

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 Tests	:	1 Hour 30 Minutes			

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

Department of Computer Science & Engineering
DISCRETE STRUCTURES

SYLLABUS FOR B.E. III-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks:60	Course Code : U18PC340CS
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
1 Understand the concepts of set theory, arithmetic logic and proof techniques	1 Construct compound statements using logical connectives and verify the validity of conclusion using inference rules
2 Build mathematical models to solve the real world problems by using appropriate methods	2 Compare types of relations and functions. Apply principle of inclusion and exclusion to solve counting problems
	3 Solve recurrence relations using characteristic roots method and generating functions.
	4 Apply number theory to solve problems in crypto system
	5 Apply algebraic structures for error detection and correction

UNIT-I:

Fundamentals of Logic: Basic Connectives and Truth Tables, Logical Equivalence, Logical Implication, Use of Quantifiers, Definitions and the Proof of Theorems.

Properties of the Integers: The well – ordering principle, Recursive definitions, The division algorithms, The Greatest Common Divisor, The Fundamental theorem of arithmetic.

UNIT-II:

Functions: Cartesian Product, One-to-one, Onto Functions, Special Functions, Pigeonhole Principle, Composition and Inverse Functions.

Relations: Partial Orders, Equivalence Relations and Partitions.

With effect from the Academic Year 2019-20

Principle of Inclusion and Exclusion: Principles of Inclusion and Exclusion, Generalizations of Principle, Derangements, Rook Polynomials, Arrangements with Forbidden Positions.

UNIT-III:

Generating Functions: Introductory Examples, Definition and Examples, Partitions of Integers, Exponential Generating Function, Summation Operator.

Recurrence Relations: First – Order Linear Recurrence Relation, Second – Order Linear Homogenous Recurrence Relation with Constant Coefficients, Non Homogenous Recurrence Relation.

UNIT-IV:

Rings and Modular Arithmetic: The Ring structure: Definition and Examples, Ring Properties and Substructures, The Integers modulo n , Ring Homomorphism and Isomorphism, RSA cryptosystem.

Number Theory: Prime Numbers, Fermat's and Euler Theorems , Testing for Primality, The Chinese Remainder Theorem.

UNIT-V:

Algebraic Structures:

Algebraic System – General Properties, semi groups, Monoids, Homomorphism, Cosets and Lagrange's Theorem, Elements of Coding Theory, The Hamming Metric, The Parity Check generating Matrices, Group Codes: Decoding with Coset Leaders.

Learning Resources:

1. Ralph P. Grimaldi, Discrete and Combinatorial Mathematics, 4th Edition (2003), Pearson Education.
2. William Stallings, Cryptography and Network Security , 4th Edition(2009), Pearson.
3. Kenneth H Rosen, Discrete mathematics and its applications, 5thEdition (2006), Tata McGraw-Hill Edition, New Delhi.
4. J.P. Tremblay, R. Manohar, Discrete Mathematical Structure with Applications to Computer Science, 4th Edition (1987),McGraw Hill ,New Delhi.
5. Joe L. Mott, A. Kandel, T.P. Baker, Discrete Mathematics for Computer Scientists & Mathematicians,2nd Edition (1986), Prentice Hall.
6. Thomas Koshy, Discrete Mathematics with Applications, 1stEdition (2004), Elsevier Inc.
7. <http://nptel.ac.in/courses/106106094/>
8. <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-fall-2010>

With effect from the Academic Year 2019-20

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 Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2019-20

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

Department of Mechanical Engineering
INTRODUCTION TO ENTREPRENEURSHIP

SYLLABUS FOR B.E.III-SEMESTER

L:T:P(Hrs/week):1:1:0:0	SEE Marks:40	Course Code: U18MC310ME
Credits :0	CIE Marks:30	Duration of SEE:02Hours

COURSE OBJECTIVE	COURSE OUTCOMES
The objective of this course is to inspire students to develop entrepreneurial mind-set, provide the information about the facilities, schemes available to start enterprise in India.	On completion of the course, students will be able to <ol style="list-style-type: none">1 demonstrate awareness about entrepreneurship and potentially be an entrepreneur.2 generate and analyse the business ideas3 know about the supporting organizations available to establish the business in the country4 prepare a business plan report

UNIT-I: INTRODUCTION TO ENTREPRENEURSHIP

Entrepreneurial characteristics, Classification of Enterprises, Forms of Business organizations, Role of Entrepreneurship in economic development, Start-ups.

Idea Generation and Opportunity Assessment: Ideas generation, Sources of New Ideas, Techniques for generating ideas, Opportunity Recognition, Steps in tapping opportunities.

UNIT-II:

INSTITUTIONS SUPPORTING SMALL BUSINESS ENTERPRISES

Central level Institutions: NABARD, SIDBI, NIC, KVIC, NIESBUD, SIDO, DST, EDI, FICCI, CII, ASSOCHAM etc., State Level Institutions: DICs, SFC, SIDC, Other financial assistance.

Entrepreneurial skills, design thinking, selling and communication. Project Formulation and Appraisal, Preparation of Project Report, Guidelines for Report preparation, Project report and pitching

Learning Resources:

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

Web Resources:

7. <http://www.learnwise.org>

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

1	No. of Internal Tests	:	<input type="text" value="1"/>	Max. Marks for each Internal Test	:	<input type="text" value="20"/>
2	No. of Assignments	:	<input type="text" value="1"/>	Max. Marks for each Assignment	:	<input type="text" value="5"/>
3	No. of Quizzes	:	<input type="text" value="1"/>	Max. Marks for each Quiz Test	:	<input type="text" value="5"/>

Duration of Internal Tests : 1 Hour 30 minutes

With effect from the Academic Year 2019-20
VASAVI COLLEGE OF ENGINEERING (Autonomous)
 IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering
DATA STRUCTURES LAB

SYLLABUS FOR B.E. III-SEMESTER

L:T:P(Hrs./week): 0:0:2	SEE Marks : 50	Course Code: U18PC321CS
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 Design and analyze linear and nonlinear data structures	1 Implement insert, delete, search, sort and traverse operations on array and linked list
2 Acquire programming skills to implement sorting and searching techniques	2 Develop applications using stack and queue
3 Identify and apply the suitable data structure for the given real world problem	3 Apply nonlinear data structures to solve a problem
	4 Implement appropriate sorting technique for a given data set
	5 Implement hashing techniques to perform dictionary operations

Programming Exercise:

1. Implementation of Formula based representation.
2. Implementation of Singly Linked List, Doubly Linked List and Circular Linked List.
3. Implementation of Polynomial Arithmetic using Linked List.
4. Implementation of String Matching algorithms.
5. Implementation of Stacks, Queues.(Using both Arrays and Linked Lists)
6. Implementation of Infix to Postfix Conversion, Postfix Expression Evaluation.
7. Implementation of Recursive and Iterative Traversals on Binary Tree.
8. Implementation of Binary Search Tree.
9. Implementation of Operations on Binary Tree (Delete Entire Tree, Copy Entire Tree, Mirror Image, Level Order, Search for a Node etc.)
10. Implementation of Traversal on Graphs.

11. Implementation of Selection, Merge, Quick, Heap, and Insertion Sort.
12. Implementation of Binary Search and Hashing
13. Implementation of operations on AVL Trees.
14. Implementation of B-Trees.
15. Develop application using appropriate data structures.

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. Gilbert 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>

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

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

Department of Computer Science & Engineering
OBJECT ORIENTED PROGRAMMING LAB

SYLLABUS FOR B.E. III-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: U18PC331CS
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 Implement object oriented system development using Java constructs	1 Implement a use-case using OOP concepts
2 Develop robust Java application applying right data structures, IO streams and graphical user interface.	2 Develop applications using multi threaded programming
	3 Implement I/O operations using console and file streams
	4 Apply collection framework to implement a given scenario
	5 Develop dynamic Java application by using JApplets and JFrames

Programming Exercise:

1. A program to illustrate the concept of class with constructors, methods and overloading.
2. A program to illustrate the concept of inheritance and dynamic polymorphism
3. A program to illustrate the usage of abstract class & Interface
4. A program to create Packages.
5. A program to illustrate Exception Handling.
6. A program to illustrate Thread Synchronization.
7. A program to work on strings using String classes.
8. A program to illustrate the usage of Filter and Buffered I/O streams
9. A program to demonstrate Serialization and Deserialization
10. A program to demonstrate usage of Regular Expressions
11. A program using List & Set interfaces, Iterator & ListIterator
12. A program using Map interface, Date, Calendar & Timer.

With effect from the Academic Year 2019-20

13. A program to implement object comparison using comparator
14. A program to implement Applets and parameterized Applets
15. A program to develop Layouts and implement Event Handling
16. An application involving GUI with different controls, menus using Swing classes.

Learning Resources:

1. Herbert Schildt, The Complete Reference Java, 7th Edition, Tata McGraw Hill 2005.
2. James M Slack, Programming and Problem Solving with JAVA, Thomson Learning 2002.
3. Timothy Budd, An introduction to Object-Oriented Programming, 3rd Edition, Pearson Education, 2008
4. C Thomas Wu, An Introduction to Object Oriented Programming with Java, Tata McGraw Hill, 2005.
5. P. Radha Krishna, Object Oriented Programming through Java, Universities Press, 2007.
6. Sachin Malhotra, Saurabh Choudhary, Programming in Java, 2nd Edition, Oxford Press, 2014.
7. <https://docs.oracle.com/javase/9/docs/api/overview-summary.html>

No. of Internal Tests:	02	Max. Marks for Internal Test:	12
Marks for day-to-day laboratory class work			18
Duration of Internal Test: 2 Hours			

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

Dept	Title	Code	credits
Civil	Green Buildings	U18OE310CE	2
ECE	Introduction to Signals & Systems	U18OE310EC	2
ECE	Introduction to Principles of Communication Engineering	U18OE320EC	2
ECE	Python Programming	U18OE330EC	2
EEE	Non - Conventional Energy Sources	U18OE310EE	2
Mech.	Geometric Modeling	U18OE310ME	2
Mech.	Mechanical Technology	U18OE320ME	2
Mech.	Basic Heat Transfer for Electronic Systems	U18OE330ME	2
Maths.	Basics of Cryptology	U18OE520MA	2
Physics	Smart Materials and Applications	U18OE310PH	2
Chemistry	Battery science & its applications	U18OE310CH	2

With effect from the Academic Year 2019-20
VASAVI COLLEGE OF ENGINEERING (Autonomous)
 IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
 GREEN BUILDINGS (Open Elective-I)

SYLLABUS FOR B.E. III-SEMESTER

L : T : P (Hrs./week):2:0:0	SEE Marks:60	Course Code: U18OE310CE
Credits : 2	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	Upon the completion of this course the students will be expected to:
<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 cover 3. 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 harvesting 2. Relate safety to Green Technology 3. Understand the concepts of green buildings 4. Understand rating systems of GRIHA and LEED

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

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

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

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

Learning Resources:

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

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

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

Duration of Internal Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING**

INTRODUCTION TO SIGNALS & SYSTEMS

(OPEN ELECTIVE –I)

SYLLABUS FOR B.E. III – SEMESTER

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

COURSE OBJECTIVES	COURSE OUTCOMES
<ol style="list-style-type: none">1. Define and classify continuous and discrete time signals and systems.2. Determine frequency domain characteristics of continuous and discrete time signals.	<p>On completion of the course, students will be able to</p> <ol style="list-style-type: none">1. Analyze basic signals and systems in continuous and discrete time domain2. Apply the properties of different transformation techniques to analyze continuous time domain signals and systems in frequency domain3. Determine the response of an LTI system using Convolution4. Apply the properties of different transformation techniques to convert a discrete time domain signal to frequency domain

UNIT – I: Continuous time signals: types of signals, representation of signals, basic elementary signals, operations on signals.

Continuous time systems: classification of systems - static and dynamic, linear and non linear, time invariant and time variant.

UNIT – II: Continuous time Fourier transforms: Introduction, existence, properties, magnitude and phase spectrums.

Laplace transforms: Introduction, existence, Laplace transform of basic elementary signals, properties, inverse Laplace transforms.

With effect from the Academic Year 2019-20

UNIT – III: Discrete time signals: types of signals, representation of signals, basic elementary signals, operations on signals.

Discrete time systems: classification of systems - static and dynamic, linear and non linear, time invariant and time variant.

UNIT – IV: LTI Systems: Introduction to continuous and discrete time LTI systems, properties, impulse response, convolution, causality, stability, transfer function.

Z-transform: Introduction, existence, Z-transform of basic elementary signals, properties, inverse Z-transforms.

Applications: Basic network Analysis, Servo Motor

Learning Resources:

1. P. Ramakrishna Rao, Signals and Systems, McGraw Hill, 2008.
2. Alan V. Oppenheim, Alan S. Willsky and S. Hamid Nawab, Signals and Systems, 2nd ed., PHI, 2009.
3. Nagoor kani , Signals and Systems McGraw Hill, 2013
4. https://onlinecourses.nptel.ac.in/noc19_ee07/preview
(Principle of Signals and Systems by Prof. Aditya K Jagannatham)
5. <https://www.edx.org/course/signals-and-systems-part-1-1>
6. <https://www.edx.org/course/signals-systems-part-2-iitbombayx-ee210-2x-3>

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

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

Duration of Internal Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING**

**INTRODUCTION TO PRINCIPLES OF COMMUNICATION
ENGINEERING**
(OPEN ELECTIVE –I)

SYLLABUS FOR B.E. III – SEMESTER

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

COURSE OBJECTIVES	COURSE OUTCOMES
<ol style="list-style-type: none">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.	<p>On completion of the course, students will be able to</p> <ol style="list-style-type: none">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 2019-20

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

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

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

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

Learning Resources :

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

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

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

Duration of Internal Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING**

**PYTHON PROGRAMMING
(OPEN ELECTIVE –I)**

SYLLABUS FOR B.E. III – SEMESTER

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

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
1 Acquire problem solving skills	1 Develop Python programs with conditional statements and loops.
2 Write programs using Python language	2 Write programs using functions, strings and lists.
	3 Construct Python data structures programs using tuples, dictionaries and set.
	4 Develop programs using files and Object oriented programming .

UNIT-I:

Basics of Python Programming: Features of Python, variables and identifiers, operators and expressions.

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

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

UNIT-II:

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

With effect from the Academic Year 2019-20

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

UNIT –III:

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

Set: Introduction, Set operations.

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

UNIT-IV:

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

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

Learning Resources:

1. Reema Thareja ,“Python programming using problem solving approach “, Oxford university press.
2. Allen Downey,“ Think Python: How to Think Like a Computer Scientist”, O’Reilly publications,2nd Edition.
3. Albert Lukaszewski,“Mysql for python “, PACKT publishers
4. Mark Lutz , “Learning Python”,O’Reilly Publications.
5. Stewart Venit and Elizabeth Drake, Prelude to Programming: Concepts and Design, 6th Edition(2015), Pearson India
6. Mark J Guzdial, Introduction to Computing and programming in Python, 3rdEdition(2013), Pearson India
7. <http://nptel.ac.in/courses/117106113/34>
8. <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-01sc-introduction-to-electrical-engineering-and-computer-science-i-spring-2011/python-tutorial/>
9. www.scipy-lectures.org/intro/language/python_language.html

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:	02	Max. Marks for each Assignment:	5
3	No. of Quizzes:	02	Max. Marks for each Quiz Test:	5

Duration of Internal Test: 1 Hour 30 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

NON-CONVENTIONAL ENERGY SOURCES

(OPEN ELECTIVE –I)

SYLLABUS FOR B.E. III-SEMESTER

L:T:P(Hrs/week):2:0:0	SEE Marks: 60	Course Code: U18OE310EE
Credits : 2	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To provide a survey of the most important renewable energy resources and the technologies for harnessing these resources within the framework of a broad range of simple to state-of-the-art energy systems.	On completion of the course, students will be able to 1. Demonstrate the generation of electricity from various Non-Conventional sources of energy, have a working knowledge on types of fuel cells. 2. Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation. 3. Explore the concepts involved in wind energy conversion system by studying its components, types and performance. 4. Illustrate ocean energy and explain the operational methods of their utilization. 5. Acquire the knowledge on Geothermal energy.

UNIT-I: Fuel cells: Need for Non-conventional energy sources, Types of Non-Conventional energy sources

Fuel cells: Definition-Classification of fuel cells-Design and Principle of operation with special reference to H₂-O₂-Ion- Exchange membrane fuel cell-Molten carbonate fuel cell-Solid oxide electrolyte cells- Comparison of fuel cells- Advantages and Disadvantages of fuel cells-Applications of Fuel cells.

UNIT-II: Solar Energy and Biomass Energy:

Solar Energy : Solar radiation and its measurements-Solar energy collectors: Flat Plate and Concentrating Collectors- solar pond -Applications of Solar energy.

Biomass Energy: Definition-Biomass conversion technologies: Incineration-Thermo chemical conversion- Bio- chemical conversion

UNIT-III: Wind Energy: Nature of wind-Basic components of Wind Energy Conversion System(WECS)-Wind energy collectors: Horizontal and vertical axis rotors- Advantages and Disadvantages of WECS - Applications of wind energy.

UNIT-IV: Ocean Energy and Geothermal Energy:

Ocean Energy: Ocean thermal electric conversion (OTEC) methods: Open cycle and Closed cycle- Principles of tidal power generation-Advantages and limitations of tidal power generation. Wave energy conversion devices

Geothermal Energy: Geothermal resources- Vapour dominated geothermal plant- Liquid dominated geothermal plant- Applications of Geothermal Energy.

Learning Resources:

1. G.D. Rai, Non-Conventional Energy Sources ,Khanna Publishers, New Delhi, 2011.
2. B H KHAN, Non-Conventional Energy Resources, McGraw Hill, 2nd Edition, 2009.
3. Ashok Desai V, Non-Conventional Energy, Wiley Eastern Ltd, 1990.
4. Mittal K.M, Non-Conventional Energy Systems, Wheeler Publishing Co. Ltd, 1997.
5. Ramesh R, Kurnar K.U, Renewable Energy Technologies, Narosa Publishing House, New Delhi, 1997.

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

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

Duration of Internal Test: 90 Minutes

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

DEPARTMENT OF MECHANICAL ENGINEERING
GEOMETRIC MODELLING (Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: U18OE310ME
Credits :02	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVE	COURSE OUTCOMES
	On completion of the course, students will be able to
The objective of this course is to understand wire-frame modelling & transformations, surface, solid modelling and assembly modelling techniques.	<ol style="list-style-type: none"> 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.

With effect from the Academic Year 2019-20

UNIT-II: SYNTHETIC CURVES: Parametric representation of cubic spline, Bezier and B– spline curves, continuity, properties and characteristics of splines. Concepts of NURBS, synthetic curves demonstration.

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

UNIT-III: SURFACE MODELING: Analytical surfaces: Definitions of planar, surface of revolution, Tabulated cylinder. Synthetic surfaces: Cubic and Bezier surfaces, visualization of different surfaces.

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

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 Minutes

With effect from the Academic Year 2019-20
VASAVI COLLEGE OF ENGINEERING (Autonomous)
 IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MECHANICAL ENGINEERING
 MECHANICAL TECHNOLOGY (Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

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

COURSE OBJECTIVE	COURSE OUTCOMES
	On completion of the course, students will be able to
The objective of this course is to learn the basic principles of excavating equipment, conveying equipment hoisting equipment, concrete producing equipment and pneumatic equipment.	<ol style="list-style-type: none"> 1 identify the operations of various earth moving equipments for maintenance and selection with respect to their applications. 2 justify various conveying equipment for transporting material based on working principles. 3 Explain the working principles of various types of hoisting equipment in civil engineering applications. 4 examine various aggregate and concrete producing equipments used in concrete production and working of pneumatic equipment.

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

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

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

UNIT-IV:AGGREGATE AND CONCRETE PRODUCING EQUIPMENT:

Crushers – Jaw, Gyratory, Hammer and Roll Crushers, Screens – Stationary, Shaking and Vibrating screens. Concrete mixers and Concrete pumps.

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

Learning Resources:

1. R.L. Peurifoy, "Construction Planning Equipment and Methods", 7th Edition, McGraw-Hill Publishers, 1956.
2. Mahesh Varma, "Construction Equipment and its planning and application", Metropolitan books Co, Delhi, 2004
3. Goodes Spence, "Building and Civil Engineering Plant", Crosby Lock Wood, 1995.

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

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

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MECHANICAL ENGINEERING

BASIC HEAT TRANSFER FOR ELECTRONIC SYSTEMS

(Open Elective-I)

SYLLABUS FOR B.E.III-SEMESTER

L:T:P(Hrs/week):2:0:0	SEE Marks:60	Course Code: U18OE330ME
Credits :02	CIE Marks:40	Duration of SEE:03Hours

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

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

UNIT-II: SECOND LAW OF THERMODYNAMICS: Limitations of the First Law; Second Law of Thermodynamics- Thermal Reservoir, Heat Engine, Heat pump, Parameters of performance, Kelvin-Planck and Clausius Statements and their Equivalence / Corollaries, PMM II, Carnot cycle and its specialties, Clausius inequality, introduction to entropy.

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

UNIT-IV: INTRODUCTION TO COOLING OF ELECTRONIC EQUIPMENT

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

Learning Resources:

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

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

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

Duration of Internal Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF PHYSICS
Open elective Course
SMART MATERIALS AND APPLICATIONS

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

Course Objectives	Course Outcomes
The student will be able to 1. grasp the concepts of 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	At the end of the course, the student should at least be able: 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 (8 hours)

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

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

UNIT II: PYRO AND THERMO-ELECTRIC MATERIALS (6 hours)

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

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

UNIT III: SHAPE MEMORY MATERIALS (8 hours)

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

With effect from the Academic Year 2019-20
shape memory alloys, biomedical Materials, Advantages, disadvantages of
SMAs, Applications of SMAs.

UNIT-IV: CHROMIC MATERIALS (6 hours)

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

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

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

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

Learning Resources:

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

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

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

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

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

Duration of Internal Tests : 90 Minutes

With effect from the Academic Year 2019-20
VASAVI COLLEGE OF ENGINEERING
(Autonomous)
 IBRAHIMBAGH, HYDERABAD – 500 031

Department of Chemistry
BATTERY SCIENCE & ITS APPLICATIONS
(OPEN ELECTIVE –I)

SYLLABUS FOR B.E. III SEMESTER

L:T:P (Hrs./week):2:0:0	SEE Marks :60	Course Code : U18OE310CH
Credits :2	CIE Marks :40	Duration of SEE :3 Hours

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

UNIT-I: BATTERIES- FUNDAMENTALS

Introduction and types of batteries: Primary and secondary.

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

UNIT-II: PRIMARY BATTERIES

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

With effect from the Academic Year 2019-20

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).

Learning Resources:

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

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

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

Duration of Internal Tests : 90Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-18)

B.E. – COMPUTER SCIENCE & ENGINEERING : IV SEMESTER (2019 - 2020)

B.E (CSE) 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								
U18HS430EH	Skill Development: Communication Skills in English – II	2	-	-	3	60	40	2
U18PC410CS	Microprocessors, Microcontroller & Interfacing	3	-	-	3	60	40	3
U18PC420CS	Operating Systems	3	-	-	3	60	40	3
U18PC430CS	Design & Analysis of Algorithms	3	-	-	3	60	40	3
U18PC440CS	Computer Architecture	3	-	-	3	60	40	3
U18OE4XXXX	Open Elective-II	3	-	-	3	60	40	3
U18MC010CE	Environmental Science	2	-	-	3	60	40	-
PRACTICALS								
U18PC411CS	Microprocessors, Microcontroller & Interfacing Lab	-	-	2	3	50	30	1
U18PC421CS	Operating Systems Lab	-	-	2	3	50	30	1
U18PC431CS	Design & Analysis of Algorithms Lab	-	-	2	3	50	30	1
TOTAL		19	-	6	-	570	370	20
GRAND TOTAL		25			-	940		
Student should acquire one online certification course during III Semester to VII Semester								
Left over hours are allocated for Extra Curricular Activities / Co-Curricular Activities / Sports / Library / Proctorial Interaction / CC / RC / TC								

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Humanities and Social Sciences

COMMUNICATION SKILLS IN ENGLISH-II

SKILL DEVELOPMENT COURSE:II

SYLLABUS FOR B. E -IV SEMESTER
(COMMON FOR ALL BRANCHES)

L:T : P(Hrs/Week): 2:0:0	SEE Marks : 60	Course Code: U18HS430EH
Credits: 2	CIE Marks : 40	Duration of SEE: 3 Hours

Course Overview:

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

Course Objective:

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

Overview of the delivery Methodology:

- Students will be given Reading/Listening exercises that they have would have to do as a prerequisite for the class room intervention
- Every Session will have activities on all the four skills. Listening, Speaking, Reading and Writing
- The Writing and Reading exercises will be given in the workbook and will carry marks
- Vocabulary exercises will also be part of every session
- Students will be asked to summarise their takeaways in every class in three sentences.
- The Lateral entry students will be given a self study plan for language enhancement and will be given extra reading and writing exercises. This will be done through Talent Sprint's online portal
- To personalize the learning a variety of case studies and

With effect from the Academic Year 2019-20

structured problem solving activities will be given in small groups and the trainers will facilitate peer reviews.

- Integration of continuous grading (for assignment 1 and 2), instant feedback, (peer review sheets) clear goals, rewards (certificates and appreciation kits), have been included this time for positive reinforcement.

Unit 1: Discussions and Debates

Module Overview:

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

Learning Outcome:

The students should be able to:

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

Competencies:

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

Sessions:

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

Unit 2: Powerful Presentations

Unit Overview:

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

Learning Outcome:

Students should be able to:

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

Sessions:

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

Unit 3 - Effective Technical Writing

Unit Overview:

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

Learning Outcome:

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

Competencies:

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

Sessions:

1. Information Mapping
2. Report writing
3. Memos
4. SoP (statement of purpose)

5. MoM (Minutes of the Meeting)

Unit 4 - Reading for Content and Context

Unit Overview:

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

Learning Outcomes

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

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

Competencies

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

Sessions:

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

Unit 5 – Critical Reading Skills

Unit Overview:

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

Learning Outcomes

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

Competencies:

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

a. Understand the meaning of new vocabulary through:

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

2) Roots and affixes

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

Sessions

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

Students are given workbooks prepared by Talent Sprint.

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

MICROPROCESSORS, MICROCONTROLLER & INTERFACING

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : U18PC410CS
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 Explain the architecture of 8086 microprocessor, 8051 microcontroller and ARM processor 2 Write assembly language programs to interface I/O devices with processor and controller 	<ol style="list-style-type: none"> 1 Explain the architecture, addressing modes and instruction set of 8086 microprocessor 2 Explain interrupt handling mechanisms of 8086 microprocessor 3 Interface analog and digital I/O devices with 8086 microprocessor 4 Write assembly language programs using instruction set of 8051 and ARM controller 5 Write programs to interface 8051 microcontroller with I/O devices such as keyboard and stepper motor

UNIT-I:

Microprocessor: Introduction, Overview of Micro computer structure and Operation, Microprocessor Evolution and Types, 8086 Internal Architecture, Pin Configuration, Minimum and Maximum mode, addressing modes, Instruction set, Programming the 8086, Accessing Data in Memory.

UNIT-II: Implementing standard program structures in 8086, Strings, Procedures and Macros, Assembler directives, Interrupts and Interrupt Applications, Hardware and software interrupt applications, Interrupt examples.

UNIT-III:

Digital Interfacing: Programmable Parallel Ports and Handshake Input/Output, Keyboard and display Controller(8279)Interfacing, Programmable Interrupt Controller(8259),Interfacing to Alpha Numeric Displays, Interfacing LCD displays.
Analog Interfacing – A/D & D/A interfacing, DMA Controller(8257), Dynamic RAMs.

UNIT-IV: Introduction to Microcontrollers, 8051 Architecture, Instruction set, Addressing modes and Programming techniques. Comparison of various families of 8-bit micro controllers, System Design Techniques.

UNIT-V: Interfacing of LCD, ADC, Sensors, Stepper motor, keyboard and DAC using 8051 microcontrollers.

ARM Processor: Introduction, Processor and Memory Organization, Data Operations, Flow of Control.

Case studies: Case study on Home protection system, Case study on closed loop DC motor speed control system.

Learning Resources:

1. Douglas V. Hall, Microprocessors and Interfacing, 2ndEdition (2006), McGraw Hill.
2. Kenneth J. Ayala, The 8051 Microcontroller Architecture, Programming and Application, Penram International (2007)
3. Marilyn Wolf, Computers as Components: Principles of Embedded Computing System Design, 3rd Edition (2012), Elsevier Morgan Kauffmann Publishers.
4. Yu-cheng Liu, Glenn A. Gibson, Microcomputer Systems The 8086/8088 Family - Architecture, Programming and Design 2ndEdition (2011)
5. Barry B. Brey, The Intel Microprocessor, 8086/8088,80186/80188, 80286, 80386, 80486, Pentium and Pentium pro-processors – Architecture, Programming and interfacing, 8thEdition (2013), Prentice Hall.
6. Ray A.K & Bhurchandhi K.M, Advanced Microprocessor and Peripherals,2ndEdition(2007),TMH.
7. K. Shibu, Introduction to Embedded Systems, (2009), Paperback.
8. Speed Control of 2-pole DC Motor Using Pwm PROTEUS VSM 7.9 & AVR STUDIO (SOFTWARE)By IJSTE - International Journal of Science Technology and Engineering.
9. <http://nptel.ac.in/courses/108107029/>

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 Tests : 1 Hour 30 Minutes

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

Department of Computer Science & Engineering
 OPERATING SYSTEMS

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks: 60	Course Code: U18PC420CS
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 Understand Operating system Structures, Services and threading models 2 Learn operating system services by considering case studies such as Linux, Windows and Android 	<ol style="list-style-type: none"> 1 Explain Operating system structures and compare CPU scheduling algorithms 2 Apply contiguous & non-contiguous techniques for main memory management and explain file system implementation 3 Design solutions for classical synchronization problems and describe deadlock handling methods 4 Explain device management and I/O operation implementation techniques 5 Apply Access matrix for system protection. Describe the features of Linux, Windows and Android Operating systems

UNIT-I:

Introduction to operating systems: Definition, User view and System view of the Operating system, Computer- system organization, Computer-system architecture, Operating system structure, Operating system operations, Operating system services, System calls

Process: Process concept, Process Scheduling, Operations on process, Inter-process communication, Threads, Multithreading Models, Multicore programming.

CPU Scheduling: Scheduling Criteria, Scheduling Algorithms, Multiprocessor scheduling.

UNIT-II:

Memory Management: Swapping, Contiguous memory allocation, Paging, Segmentation, Structure of the page table.

Virtual memory: Demand paging, Page replacement Algorithms, Thrashing.

File System Interface: File Concept, Access Methods, Directory and Disk Structure

File System Implementation: File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free Space management.

UNIT –III:

Process synchronization: The critical Section problem, Peterson's solution, Synchronization Hardware, Semaphores, Classic problems of Synchronization, Monitors.

Deadlocks: System model, deadlock characterization, Methods for handling deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from deadlock.

UNIT –IV:

Device Management: Disk Structure, Disk Attachment, Disk Scheduling, Disk Management, Swap Space Management, RAID structure.

I/O System: I/O hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O request to hardware operation.

UNIT-V:

Protection: Goals of protection, Principles of protection, Domain of protection, Access matrix, Implementation of Access matrix

Case Studies: Linux System: Design Principles, Kernel Modules, Process Management, Scheduling

Windows - Design Principles, System components ,File system

Android: Architecture, Activity and Service life cycle.

Learning Resources:

1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, Operating System Concepts, 9th Edition (2016), Wiley India.
2. Andrew S. Tanenbaum, Modern Operating Systems, 2nd Edition (2001), Pearson Education, Asia.
3. Dhananjay, Dhamdhere.M, Operating System-concept based approach, 3rd edition (2009), Tata McGraw Hill, Asia
4. Robet Love: Linux Kernel Development, (2004)Pearson Education
5. Richard Stevens, Stephen Rago, Advanced Programming in the UNIX Environment, 3rd Edition(2013), Pearson Education
6. <http://web.stanford.edu/~ouster/cgi-bin/cs140-spring19/index.php>
7. <https://nptel.ac.in/courses/106106144/>

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 Tests : 1 Hour 30 Minutes

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

Department of Computer Science & Engineering
DESIGN AND ANALYSIS OF ALGORITHMS

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week):3:0:0	SEE Marks : 60	Course Code: U18PC430CS
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 Analyze the asymptotic performance of algorithms 2 Apply algorithm design strategies to solve science and engineering problems. 	<ol style="list-style-type: none"> 1 Compare asymptotic behavior of functions derived from algorithms 2 Apply divide & conquer and greedy algorithmic design paradigms to solve problems 3 Design algorithms using Dynamic Programming strategy 4 Design algorithms for problems using backtracking and branch & bound algorithm design techniques 5 Identify the complexity class of a given problem

UNIT – I:

Introduction: Introduction to Algorithm, algorithm specification.

Performance analysis: space complexity, time complexity. Asymptotic notations, amortized analysis

UNIT – II:

Divide and Conquer: General method, binary search, finding maximum and minimum, Merge sort, quick sort, performance measurement, Masters theorem.

The Greedy Method: The general method, Knapsack problem, Job sequencing with deadlines, minimum cost spanning trees, optimal Storage on Tapes, Optimal Merge Patterns, single Source Shortest Paths, network flows.

UNIT – III: Dynamic Programming: the general method, matrix-chain multiplication problem, multistage graph, All Pairs Shortest Paths, Optimal Binary Search Trees (OBST), 0/1 Knapsack, Reliability Design, Traveling Salesman Problem, Bi-connected Components and DFS, Longest Common Subsequence (LCS) problem.

UNIT – IV:

Backtracking: General method, the 8-Queens Problem, Graph Coloring, Hamiltonian Cycles, Knapsack Problem.

Branch and Bound: The method, 0/1 Knapsack problem, Traveling Salesperson problem.

UNIT – V: NP-Hard and NP-Complete problems: Tractable and intractable problems, Non-Deterministic search and sorting, classes P, NP, NP-Complete, NP-Hard, Satisfiability (SAT), Cook's theorem, reductions, procedure for NP-Complete, clique decision problem, graph coloring, node cover, Hamiltonian cycle, TSP.

Learning Resources:

1. Ellis Horowitz, Sartaj Sahani, Sanguthevar Rajasekaran, " Fundamentals of computer Algorithms", Second edition (2008),Universities Press.
2. Thomas H. Cormen, Leiserson C.E, Rivest.R.L , Stein.C, Introduction to Algorithm, 2nd edition (2001), MIT press, USA.
3. Michael T. Goodrich, Roberto Tamassia, Algorithm Design, foundations, analysis, and internet examples, WILEY student edition (2006).
4. Aho, Hopcroft, Ulman, The Design and Analysis of Computer Algorithms, (2000), Pearson Education.
5. Steven S.Skiema, The Algorithm Design Manual, Springer (1997).
6. Algorithm Design, 1st Edition, Jon Kleinberg and Éva Tardos, Pearson.
7. <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-046j-design-and-analysis-of-algorithms-spring-2015/index.htm>.
8. <http://openclassroom.stanford.edu/MainFolder/CoursePage.php?course=IntroToAlgorithms>
9. <http://nptel.ac.in/courses/106101060/>

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 Tests : 1 Hour 30 Minutes

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

Department of Computer Science & Engineering
COMPUTER ARCHITECTURE

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : U18PC440CS
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 Learn the structure and behavior of various functional modules of a computer and identify how they interact to provide the processing needs of the user. 2 Design memory modules and enhance performance of a CPU using pipelining techniques 	<ol style="list-style-type: none"> 1 Draw the functional block diagram of single bus architecture of a computer and describe the register transfer notations of instruction execution sequencing. 2 Compare Hardwired control unit and micro programmed control unit in the design of CPU. 3 Explain the techniques used by a computer to communicate with I/O devices. 4 Design a memory module using memory organization techniques 5 Apply design techniques to enhance the performance of CPU using pipelining.

Unit I:

Basic Structure of Computers: Computer Types, Functional Units, Basic Operational Concepts, Bus Structures, Software, Performance, Multiprocessors and Multicomputer.

Machine Instructions: Instructions and Instruction Sequencing, Addressing Modes.

Unit II:

Basic Processing Unit: Fundamental Concepts- Register Transfers, Performing Arithmetic, Logic Operations, Execution of a Complete Instruction, Multiple Bus Organization, Hardwired Control.

Microprogrammed Control: Microinstructions, Microprogram Sequencing, Microprogram Example, Design of Control Unit, Hardwired Control & Microprogrammed Control.

Unit III: Input Output organization: Peripheral devices, Standard I/O Interfaces, Accessing I/O Devices, Interrupts, Direct Memory Access and Buses.

Unit IV: Memory System: Basic Concepts, Semiconductor RAM Memory, Read-Only memory, Associative Memory, Cache Memory, Performance Considerations, Virtual Memory, Memory Management Requirements.

Unit V:

Pipelining: Basic Concepts, Data Hazards, Instruction Hazards, Influence on Instruction sets, Data Path and Control Considerations, Super Scalar Operation, Performance Considerations.

Processor Family: Intel IA-64.

Learning Resources:

1. Carl.V Hamacher, Vranesic Z.G, Zaky S.G, Computer Organization, 5th Edition (2011), McGraw Hill.
2. M.Morris Mano, Computer System Architecture, 3rd Edition (2007), Pearson Education Asia.
3. William Stallings, Computer Organization & Architecture, 8th Edition (2011), Pearson Education Asia.
4. David A Patterson, John L Hennessy, Computer Organization and Design, 4th Edition (2014), Morgan Kaufmann.
5. Pal Chaudhuri.P, Computer Organization and Design, 3rd Edition (2009), Prentice Hall of India.
6. <http://nptel.ac.in/courses/106102157/>
7. <https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-823-computer-system-architecture-fall-2005/>

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 Tests	:	1 Hour 30 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

ENVIRONMENTAL SCIENCE

SYLLABUS FOR B.E. IV-SEMESTER

L: T:P(Hrs./week): 2:0:0	SEE Marks:60	Course Code: U18MC010CE
Credits : - - -	CIE Marks:40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	Upon the completion of this course students will be able to
<ol style="list-style-type: none"> 1. Describe various types of natural resources available on the earth surface. 2. Explain the concepts of an ecosystem and the biotic and abiotic components of various aquatic ecosystems. 3. Identify the values, threats of biodiversity, endangered and endemic species of India along with the conservation of biodiversity. 4. Explain the causes, effects and control measures of various types of environmental pollutions. 5. Describe the methods for water conservation, the causes, effects of global warming, climate change, acid rain, ozone layer depletion, population explosion. 	<ol style="list-style-type: none"> 1. Describe the various types of natural resources. 2. Differentiate between various biotic and abiotic components of ecosystem. 3. Examine the values, threats of biodiversity, the methods of conservation, endangered and endemic species of India. 4. Illustrate causes, effects, control measures of various types of environmental pollutions. 5. Explain the methods of water conservation, causes, effects of climate change, global warming, acid rain and ozone layer depletion, population explosion.

UNIT-I

Environmental Studies: Definition, importance of environmental studies. Natural resources: Water resources; floods, drought, conflicts over water, dams-benefits and problems. Food resources; Effects of modern agriculture, fertilizer-pesticide problems, water logging salinity. Energy resources: Renewable and non-renewable energy resources. Land Resources, soil erosion and desertification.

UNIT-II

Ecosystems: Structure and function of an ecosystems, producers,

consumers and decomposers, food chains, food webs, ecological pyramids, aquatic ecosystems (ponds, oceans, estuaries).

UNIT-III

Biodiversity: Genetic, species and ecosystem diversity. Values of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity.

UNIT-IV

Environmental Pollution: Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution, thermal pollution and solid waste & e-waste management.

UNIT-V

Social Aspects and the Environment: Water conservation, Climate change, global warming, acid rain, ozone layer depletion. Environmental Impact Assessment, population explosion.

Learning Resources:

1. Deswal S. and Deswal A., A Basic Course on Environmental studies, Dhanpat Rai & Co Pvt. Ltd. 2013.
2. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2006.
3. Suresh K. Dhameja, Environmental Studies, S.K. Kataria & Sons, 2010.
4. De A.K., Environmental Chemistry, New Age International, 2003.
5. Odum E.P., Fundamentals of Ecology, W.B. Saunders Co., USA, 2004.
6. Sharma V.K., Disaster Management, National Centre for Disaster Management, IPE, Delhi, 2013.
7. Rajagopalan R., Environmental Studies, Second Edition, Oxford University Press, 2013.

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 Tests : 1 Hour 30 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

MICROPROCESSORS, MICROCONTROLLER & INTERFACING LAB

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week): :0:2	SEE Marks : 50	Course Code: U18PC411CS
Credits : 1	CIE Marks : 30	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 Implement assembly language programs in 8086 microprocessor, 8051 and ARM controller. 2 Interface I/O devices to Microprocessor and Microcontroller. 	<ol style="list-style-type: none"> 1 Implement programs using instruction set of 8086 microprocessor. 2 Implement programs using macros and sub routines in 8086 microprocessor. 3 Develop an application to interface I/O devices with 8086 microprocessor. 4 Develop an application to interface I/O devices using 8051 microcontroller. 5 Implement assembly language programs using ARM processor.

8086 PROGRAMMING USING MICROPROCESSOR TRAINER KIT

1. Execution of basic programs on 8086 Microprocessor.
2. Programs using different addressing modes.
3. Programs using single byte, multi byte, binary, BCD addition and subtraction.
4. Programs on searching and sorting.
5. Generation of waveforms using DAC interface.
6. Interfacing and programming of 8255. (E.g. traffic light controller).
7. Interfacing keypad/display unit.

8051 PROGRAMMING

8. Execution of basic programs on 8051 Microcontroller.
9. Programs on searching and sorting.
10. Interfacing Stepper Motor.
11. Interfacing LCD Display.
12. Interfacing Keypad.
13. Execution of basic programs using ARM Processor
14. ARM’s Barrel Shifter program

Learning Resources:

1. Douglas V. Hall, Microprocessors and Interfacing, 2ndEdition (2006), McGraw Hill.
2. Kenneth J. Ayala, "The 8051 Microcontroller Architecture, Programming and Application", Penram International (2007)
3. Marilyn Wolf, Computers as Components: Principles of Embedded Computing System Design, 3rd Edition (2012), Elsevier Morgan Kauffmann Publishers.
4. Yu-cheng Liu, Glenn A. Gibson, Microcomputer Systems The 8086/8088 Family - Architecture, Programming and Design 2ndEdition (2011)
5. Barry B. Brey, The Intel Microprocessor, 8086/8088,80186/80188, 80286, 80386, 80486, Pentium and Pentium pro-processors – Architecture, Programming and interfacing, 8thEdition (2013), Prentice Hall.
6. Ray A.K & Bhurchandhi K.M, Advanced Microprocessor and Peripherals,2ndEdition (2007),TMH.
7. <http://nptel.ac.in/courses/108107029/>

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

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

Department of Computer Science & Engineering
 OPERATING SYSTEMS LAB

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week):0:0:2	SEE Marks : 50	Course Code: U18PC421CS
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 Apply system calls for process management and file management	1 Implement operations on Files and Process by using system calls
2 Implement techniques related to CPU Scheduling, Main memory management, Process synchronization and deadlock avoidance & detection	2 Implement CPU Scheduling methods
	3 Implement Contiguous memory allocation techniques and Page Replacement techniques
	4 Design and implement solutions for Inter-Process Communication
	5 Implement deadlock handling techniques

Programming Exercise:

1. Implement system calls for
 - i) File system management
 - ii) Process management
2. Implementation of CPU scheduling algorithms (FCSF, SJF, Priority, RR, Multi level)
3. Implement contiguous Memory management techniques
 - i) Best Fit
 - ii) Worst Fit
 - iii) First Fit
4. Implementation of Page Replacement algorithms

- a) FIFO
- b) LRU
- c) OPTIMAL
- 5. Implement Inter-process communication using
 - i) Pipes
 - ii) Message Queues
 - iii) Shared Memory
- 6. Implementation of Process Synchronization for Bounded buffer, Readers-Writers and Dining philosophers problems
- 7. Implementation of Deadlock handling
 - i) Resource Allocation Graph
 - ii) Safety Algorithm
 - iii) Resource Request algorithm
 - iv) Wait for graph
- 8. Implementation of Disk Scheduling algorithms a) FCFS b) SSTF c) SCAN
- 9. Build a real operating system kernel by using an open source operating system (Linux) kernel to implement services such as Process Scheduling, Process synchronization, Virtual memory and File system

Learning Resources:

- 1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, Operating System Concepts, 9th Edition (2016), Wiley India.
- 2. Andrew S. Tanenbaum, Modern Operating Systems, 2nd Edition (2001), Pearson Education, Asia.
- 3. Dhananjay, Dhamdhare.M, Operating System-concept based approach, 3rd edition (2009), Tata McGraw Hill, Asia
- 4. Robert Love: Linux Kernel Development, (2004)Pearson Education
- 5. Richard Stevens, Stephen Rago, Advanced Programming in the UNIX Environment, 3rd Edition(2013), Pearson Education
- 6. <http://web.stanford.edu/~ouster/cgi-bin/cs140-spring19/index.php>
- 7. <https://nptel.ac.in/courses/106106144/>

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

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

DESIGN & ANALYSIS OF ALGORITHMS LAB

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code : U18PC431CS
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 Implement solutions for the given problems using divide and conquer 2 Implement solutions for the given problems using greedy and dynamic programming 3 Implement solutions for the given problems using backtracking and branch and bound.	1 Implement searching, sorting and hashing using basic data structures. 2 Apply divide and conquer strategy to implement algorithm for a given problem. 3 Implement an algorithm for a given problem using Greedy design strategy 4 Apply dynamic programming to implement algorithms for a set of problems. 5 Implement algorithms for set of problems using backtracking and branch and bound.

Programming Exercise:

1. Implementation of Merge Sort, Quick Sort, Heap Sort, Binary Search and Hashing.
2. Implementation of Traversal on Graphs.
3. Implementation of Traversal on Trees and DAG.
4. Implement Single source shortest path algorithm.
5. Implement Minimum cost spanning tree algorithm.
6. Implement fractional Knapsack algorithm.
7. Implement Optimal merge patterns -Huffman encoding algorithm.

8. Implement Matrix –chain multiplication algorithm with dynamic programming.
9. Implement LCS algorithm and print Longest common subsequence.
10. Implement All-pairs shortest path algorithm.
11. Implement 0/1 Knapsack algorithm.
12. Implement multi-stage graph.
13. Implementation of N-queens problem with back tracking.
14. Implement Graph coloring problem with back tracking.
15. Implement TSP by branch and bound.
16. Implement 0/1 knapsack by branch and bound.

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

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

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

Dept	Title	Code	credits
Civil	Disaster Management	U18OE410CE	3
ECE	Mathematical Programming for Engineers	U18OE410EC	3
ECE	Introduction to Communication Systems	U18OE420EC	3
EEE	Basics of Electrical Power Generation	U18OE410EE	3
Mech.	Optimization Methods	U18OE410ME	3
Maths	Linear Algebra & Applications	U18OE410MA	3
Physics	Introduction to Optoelectronic Devices	U18OE410PH	3
Physics	Thin Film Technology and Applications	U18OE420PH	3

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

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

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P (Hrs./week):3:0:0	SEE Marks:60	Course Code: U18OE410CE
Credits : 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	Upon the completion of this course the students will be expected to:
<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.

Learning Resources:

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

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

- | | | | |
|-------------------------|-----|------------------------------------|------|
| 1 No. of Internal Tests | : 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 ELECTRONICS AND COMMUNICATION ENGINEERING
MATHEMATICAL PROGRAMMING FOR ENGINEERS**

(OPEN ELECTIVE-II)

SYLLABUS FOR B.E. IV – SEMESTER

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: U18OE410EC
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
To provide fundamental knowledge of programming language for solving problems.	On completion of the course, students will be able to <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.

UNIT - II : Scripts and Functions

Script Files, Function Files, Debugging methods in MATLAB.

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

UNIT - III : Numerical Methods Using MATLAB

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

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

UNIT - IV : Nonlinear Equations

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

UNIT - V :

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

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

Learning Resources:

1. Getting started with MATLAB "A quick introduction for scientist and engineers by Rudra Pratap, Oxford publications.
2. Advanced Guide to MATLAB-Practical Examples in Science and Engineering by S.N.Alam, S.Islam, S.K. Patel-I.K. International Publishing House Pvt. Ltd.
3. Stephen J. Chapman-"MATLAB Programming for Engineers"- 5th Edition-Cengage Learning- 2015. Getting started with MATLAB (Version 9) The Math works.
4. An Introduction to MATLAB® Programming and Numerical Methods for Engineers 1st Edition by Timmy 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 | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 3 | Max. Marks for each Assignment | : 5 |
| 3. No. of Quizzes | : 3 | Max. Marks for each Quiz Test | : 5 |

Duration of Internal Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTRODUCTION TO COMMUNICATION SYSTEMS

(OPEN ELECTIVE-II)

SYLLABUS FOR B.E. IV – SEMESTER

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: U18OE420EC
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<ol style="list-style-type: none"> 1. Distinguish between Amplitude and Frequency modulation methods and their application in Communication Receivers 2. Explain why multiplexing methods are necessary in communications and compare FDM with TDM 3. Compare and contrast FSK and BPSK modulation schemes employed in digital data transmission 4. Draw the block diagrams of different types of communication systems and explain their operation 	<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 systems 2. Analyze the power, efficiency and transmission bandwidth of Amplitude and Frequency Modulated signals. 3. Convert the Radio frequency to Intermediate frequency and explain the operation of Superheterodyne Receiver. 4. Compare and contrast Frequency Division Multiplexing and Time Division Multiplexing used in the Communication systems 5. Detect and correct errors present in bit stream data using parity check 6. Explain the basic principles of different types of communication systems.

UNIT - I :

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

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

UNIT - II :

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

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

Duration of Internal Tests: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Basics of Electrical Power Generation

(Open Elective –II)

SYLLABUS FOR B.E. IV-SEMESTER

L:T:P(Hrs./week):3:0:0	SEE Marks: 60	Course Code: U18OE410EE
Credits :3	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
To provide the knowledge about the electrical power generation from conventional energy sources and cost of the electrical power.	<ol style="list-style-type: none"> 1. Compare different sources of energy and types of power plants. 2. Enumerate the factors effecting choice of thermal ,hydel and nuclear power generation 3. Illustrate the advantages and disadvantages of thermal ,hydel and nuclear power generation 4. Estimate the cost of electrical energy consumed

Unit-I Introduction:

Electric power generation scenario in INDIA from Conventional and non conventional sources of energy. Advantages and disadvantages with conventional and non-conventional energy sources.

Unit-II Thermal power station:

Schematic arrangement, selection of site, Environmental aspects for selecting the sites and locations of thermal power stations, advantages and disadvantages

Unit-III Hydro power station:

Schematic arrangement, choice of site selection of hydro power. Environmental aspects advantages and disadvantages

Unit-IV Nuclear power station:

Mechanism of Energy Release, Nuclear Reactions-Types, Methods of Nuclear Reactions, nuclear Materials, Advantages, Factors of Selecting Site, Reactor and their functions, Nuclear Reactor Classification, Working of Nuclear Power Stations

Unit-V Tariff:

Electrical energy calculation in units. Cost of electrical energy, load factor and demand factor, tariff method- flat rate, block rate, two part.

Learning Resources:

1. M.L.Soni,P.V Gupta,U.S Bhatnagar and A.Chakraborti "A text book on Power System Engineering" Dhanpat Rai & Co.Pvt.Ltd.1999.
2. V.K Mehta and Rohit Mehta "Principles of Power Systems" S.Chand & company LTD, New Delhi 2004.
3. S.N.Singh "Electrical Power Generation, Transmission and Distribution",PHI, 2003.
4. GD Rai "Non Conventional Energy Sources "Khanna Publishers, 4th edition 2000.
5. Electrical Power, Dr. S.L. Uppal.

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

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|--------------------------|----|------------------------------------|----|
| 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 Test: 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mechanical Engineering

OPTIMIZATION METHODS (Open Elective-II)

SYLLABUS FOR B.E.IV-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: U18OE410ME
Credits :03	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVE	COURSE OUTCOMES On completion of the course, students will be able to
The objective of this course is to understand Linear & non-linear programming, transportation modeling , CPM & PERT for project scheduling and control, and application of various optimization techniques for respective field engineering (Inter disciplinary)	<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. optimization of resources in multi disciplinary areas through non-linear programming under different conditions.

UNIT-I: OPTIMIZATION-AN OVERVIEW

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

UNIT-II: ADVANCED TOPICS IN LINEAR PROGRAMMING

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

UNIT-III

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

Project Scheduling

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

UNIT-IV

Non Linear Programming Problems: Optimization methods for single variable, multivariable functions, Maxima-Minima

One Dimensional Minimization: Uni-modal Function, Unrestricted search, Exhaustive search, 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.
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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|---|------------------------|----|-----------------------------------|----|
| 1 | No. of Internal Tests: | 02 | Max.Marks for each Internal Test: | 30 |
| 2 | No. of Assignments: | 03 | Max. Marks for each Assignment: | 05 |
| 3 | No. of Quizzes: | 03 | Max. Marks for each Quiz Test: | 05 |
- Duration of Internal Test: **1 Hour 30 Minutes**

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF PHYSICS**INTRODUCTION TO OPTOELECTRONIC DEVICES****(Open Elective-II)**

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

Course Objectives	Course Outcomes
<p>The student will be able to</p> <ol style="list-style-type: none"> 1. gain knowledge on working of optoelectronic light sources like LED 2. grasp the concepts of lasing action, merits and demerits of lasers 3. acquire the fundamental knowledge on photo-detectors. 4. Narrate the properties of chromic materials 	<p>At the end of the course, the student should at least be able:</p> <ol style="list-style-type: none"> 1. accustom with various device structures of optoelectronic light sources like LED 2. acquaint with various types of lasers and their applications 3. assimilate working and use of photo detectors and solar cells in various applications 4. appreciate the importance of chromic materials in engineering field

UNIT-I: LIGHT EMITTING DIODES

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

UNIT-II: SEMICONDUCTOR LASERS

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

UNIT-III: SOLAR CELLS

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

UNIT-IV: PHOTODETECTORS

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

UNIT-V: CHROMIC MATERIALS (6 hours)

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

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

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

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

Learning Resources:

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

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

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|---|------------------------|---------------------------------|-----------------------------------|---------------------------------|
| 1 | No. of Internal Tests: | <input type="text" value="02"/> | Max.Marks for each Internal Test: | <input type="text" value="30"/> |
| 2 | No. of Assignments: | <input type="text" value="03"/> | Max. Marks for each Assignment: | <input type="text" value="05"/> |
| 3 | No. of Quizzes: | <input type="text" value="03"/> | Max. Marks for each Quiz Test: | <input type="text" value="05"/> |
- Duration of Internal Test: **1 Hour 30 Minutes**

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF PHYSICS

Open elective Course

THIN FILM TECHNOLOGY AND APPLICATIONS

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

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

UNIT-I: THIN FILM GROWTH

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

UNIT-II: DEPOSITION TECHNIQUES

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

UNIT-III: THIN FILM MATERIAL CHARACTERIZATION TECHNIQUES

Characterization techniques: X-Ray Diffraction (XRD), working principles of Scanning Electron Microscopy (SEM), working of Transmission

Electron Microscopy (TEM), Atomic Force Microscopy (AFM), Scanning Tunneling Microscope (STM), Field Ion Microscope (FEM).

UNIT-IV: PROPERTIES OF THIN FILMS

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

UNIT-V: THIN FILM DEVICES AND APPLICATIONS

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

Learning resources:

- Kasturi Chopra Thin Film Device Applications, Mac Graw Hill, New York, 2012
- A. Goswami, thin film fundamentals, New age international, 2006

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

1	No. of Internal Tests:	<input type="text" value="02"/>	Max.Marks for each Internal Test:	<input type="text" value="30"/>
2	No. of Assignments:	<input type="text" value="03"/>	Max. Marks for each Assignment:	<input type="text" value="05"/>
3	No. of Quizzes:	<input type="text" value="03"/>	Max. Marks for each Quiz Test:	<input type="text" value="05"/>

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

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

S.No.	Date	Day	Details of Activity / PublicHoliday
<u>JULY,2019</u>			
1	15-07-2019	MON	Course Registration by Students--> BE III, V & VII SEMESTER
2	16-07-2019	TUE	Course Registration by Students--> BE III, V & VII SEMESTER
3	17-07-2019	WED	Course Registration by Students--> BE III, V & VII SEMESTER
4	18-07-2019	THU	Course Registration by Students--> BE III, V & VII SEMESTER
5	19-07-2019	FRI	Course Registration by Students--> BE III, V & VII SEMESTER
6	20-07-2019	SAT	Course Registration by Students--> BE III, V & VII SEMESTER
7	21-07-2019	SUN	PUBLIC HOLIDAY
8	22-07-2019	MON	Commencement of instruction : BE III, V & VII SEMESTER
9	23-07-2019	TUE	--
10	24-07-2019	WED	--
11	25-07-2019	THU	--
12	26-07-2019	FRI	--
13	27-07-2019	SAT	--
14	28-07-2019	SUN	PUBLIC HOLIDAY
15	29-07-2019	MON	BONALU- HOLIDAY
16	30-07-2019	TUE	--
17	31-07-2019	WED	--
<u>AUGUST,2019</u>			
18	01-08-2019	THU	--
19	02-08-2019	FRI	--
20	03-08-2019	SAT	--GUEST LECTURE : BE III SEMESTER
21	04-08-2019	SUN	PUBLIC HOLIDAY
22	05-08-2019	MON	--
23	06-08-2019	TUE	--
24	07-08-2019	WED	--
25	08-08-2019	THU	-- IE EVENT: BE III SEMESTER
26	09-08-2019	FRI	--
27	10-08-2019	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
28	11-08-2019	SUN	PUBLIC HOLIDAY
29	12-08-2019	MON	BAKRID(ID-UL-FITR)
30	13-08-2019	TUE	--
31	14-08-2019	WED	--
32	15-08-2019	THU	INDEPENDENCE DAY
33	16-08-2019	FRI	--
34	17-08-2019	SAT	-- GUEST LECTURE: BE V SEMESTER
35	18-08-2019	SUN	PUBLIC HOLIDAY
36	19-08-2019	MON	--
37	20-08-2019	TUE	--
38	21-08-2019	WED	--
39	22-08-2019	THU	Orientation and Briefing session for Registration of subjects(ME/M.TECH III SEM)
40	23-08-2019	FRI	Orientation and Briefing session for Registration of subjects(ME/M.TECH III SEM)
41	24-08-2019	SAT	SRI KRISHNASHTAMI Orientation and Briefing session for Registration of subjects(ME/M.TECH III SEM)
42	25-08-2019	SUN	PUBLIC HOLIDAY
43	26-08-2019	MON	Commencement of Instruction (ME/M.TECH- III SEM)

VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS), HYDERABAD-500031

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

44	27-08-2019	TUE	--
45	28-08-2019	WED	--
46	29-08-2019	THU	--
47	30-08-2019	FRI	--
48	31-08-2019	SAT	-- CSI EVENT: BE V SEMESTER

SEPTEMBER, 2019

49	01-09-2019	SUN	PUBLIC HOLIDAY
50	02-09-2019	MON	VINAYAKA HAVITHI
51	03-09-2019	TUE	--
52	04-09-2019	WED	--
53	05-09-2019	THU	Teachers' Day celebrations
54	06-09-2019	FRI	--
55	07-09-2019	SAT	-- GUEST LECTURE: BE III SEMESTER
56	08-09-2019	SUN	PUBLIC HOLIDAY
57	09-09-2019	MON	I-Internal Test: BE III, V & VII SEMESTER
58	10-09-2019	TUE	MOHARRUM- PUBLIC HOLIDAY
59	11-09-2019	WED	I-Internal Test: BE III, V & VII SEMESTER
60	12-09-2019	THU	I-Internal Test: BE III, V & VII SEMESTER
61	13-09-2019	FRI	I-Internal Test: BE III, V & VII SEMESTER
62	14-09-2019	SAT	I-Internal Test: BE III, V & VII SEMESTER
63	15-09-2019	SUN	PUBLIC HOLIDAY- Engineers' Day
64	16-09-2019	MON	--
65	17-09-2019	TUE	--
66	18-09-2019	WED	-- CSI EVENT : BE III SEMESTER
67	19-09-2019	THU	-- IE EVENT : BE V SEMESTER
68	20-09-2019	FRI	--
69	21-09-2019	SAT	Parent-Teacher Meeting- BE III, V & VII SEMESTER
70	22-09-2019	SUN	--
71	23-09-2019	MON	--
72	24-09-2019	TUE	--
73	25-09-2019	WED	--
74	26-09-2019	THU	--
75	27-09-2019	FRI	--
76	28-09-2019	SAT	BATHUKAMMA STARTING DAY- PUBLIC HOLIDAY
77	29-09-2019	SUN	PUBLIC HOLIDAY
78	30-09-2019	MON	

OCTOBER, 2019

79	01-10-2019	TUE	
80	02-10-2019	WED	GANDHI JAYANTHI
81	03-10-2019	THU	
82	04-10-2019	FRI	
83	05-10-2019	SAT	
84	06-10-2019	SUN	PUBLIC HOLIDAY
85	07-10-2019	MON	DASARA VACATION --> All semesters of BE, MCA & ME/M.TECH
86	08-10-2019	TUE	DASARA VACATION --> All semesters of BE, MCA & ME/M.TECH
87	09-10-2019	WED	DASARA VACATION --> All semesters of BE, MCA & ME/M.TECH
88	10-10-2019	THU	DASARA VACATION --> All semesters of BE, MCA & ME/M.TECH
89	11-10-2019	FRI	DASARA VACATION --> All semesters of BE, MCA & ME/M.TECH
90	12-10-2019	SAT	DASARA VACATION --> All semesters of BE, MCA & ME/M.TECH
91	13-10-2019	SUN	PUBLIC HOLIDAY
92	14-10-2019	MON	RECOMMENCEMENT OF CLASS WORK
93	15-10-2019	TUE	--
94	16-10-2019	WED	--
95	17-10-2019	THU	--
96	18-10-2019	FRI	--
97	19-10-2019	SAT	FIRST CLASS TEST: ME/M.TECH- IIISEM
98	20-10-2019	SUN	PUBLIC HOLIDAY
99	21-10-2019	MON	--
100	22-10-2019	TUE	--

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

101	23-10-2019	WED	--
102	24-10-2019	THU	--
103	25-10-2019	FRI	--
104	26-10-2019	SAT	--
105	27-10-2019	SUN	PUBLIC HOLIDAY- DEEPAVALI
106	28-10-2019	MON	--
107	29-10-2019	TUE	--
108	30-10-2019	WED	--
109	31-10-2019	THU	--
<u>NOVEMBER, 2019</u>			
110	01-11-2019	FRI	--
111	02-11-2019	SAT	--
112	03-11-2019	SUN	PUBLIC HOLIDAY
113	04-11-2019	MON	--
114	05-11-2019	TUE	--
115	06-11-2019	WED	--
116	07-11-2019	THU	--
117	08-11-2019	FRI	--
118	09-11-2019	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
119	10-11-2019	SUN	EID MILAD-UN-NABI- PUBLIC HOLIDAY
120	11-11-2019	MON	--
121	12-11-2019	TUE	KARTHIKA PURNIMA/ GURUNANAK'S BIRTH DAY
122	13-11-2019	WED	-- II- INTERNAL TEST-BE III, V & VII SEMESTER
123	14-11-2019	THU	-- II- INTERNAL TEST-BE III, V & VII SEMESTER
124	15-11-2019	FRI	II- INTERNAL TEST-BE III, V & VII SEMESTER
125	16-11-2019	SAT	II- INTERNAL TEST-BE III, V & VII SEMESTER--> LASTDATE OF INSTRUCTION
126	17-11-2019	SUN	PUBLIC HOLIDAY
127	18-11-2019	MON	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
128	19-11-2019	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
129	20-11-2019	WED	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
130	21-11-2019	THU	PREPARATIONHOLIDAYS&PRACTICALEXAMS(BEIII,V&VIISEMESTER)
131	22-11-2019	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
132	23-11-2019	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
133	24-11-2019	SUN	PUBLIC HOLIDAY
134	25-11-2019	MON	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER) FDP –NIT WARANGAL
135	26-11-2019	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER) FDP –NIT WARANGAL
136	27-11-2019	WED	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER) FDP –NIT WARANGAL
137	28-11-2019	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER) FDP –NIT WARANGAL
138	29-11-2019	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER) FDP –NIT WARANGAL
139	30-11-2019	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER) FDP –NIT WARANGAL
<u>DECEMBER, 2019</u>			
140	01-12-2019	SUN	PUBLIC HOLIDAY
141	02-12-2019	MON	COMMENCEMENT OF THEORY EXAMS(BE III, V & VII SEMESTER)
142	03-12-2019	TUE	--
143	04-12-2019	WED	--
144	05-12-2019	THU	--
145	06-12-2019	FRI	--
146	07-12-2019	SAT	--
147	08-12-2019	SUN	PUBLIC HOLIDAY
148	09-12-2019	MON	--
149	10-12-2019	TUE	--

VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS), HYDERABAD-500031

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

150	11-12-2019	WED	--
151	12-12-2019	THU	--
152	13-12-2019	FRI	--
153	14-12-2019	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
154	15-12-2019	SUN	PUBLIC HOLIDAY
155	16-12-2019	MON	PROJECT SEMINAR(Presentation & Evaluation)- ME/M.TECH - III SEM
156	17-12-2019	TUE	PROJECT SEMINAR(Presentation & Evaluation)- ME/M.TECH - III SEM
157	18-12-2019	WED	PROJECT SEMINAR(Presentation & Evaluation)- ME/M.TECH - III SEM
158	19-12-2019	THU	PROJECT SEMINAR(Presentation & Evaluation)- ME/M.TECH - III SEM
159	20-12-2019	FRI	--
160	21-12-2019	SAT	SECOND CLASS TEST: ME/M.TECH- IIISEM--> LAST DATE OF INSTRUCTION
161	22-12-2019	SUN	PUBLIC HOLIDAY
162	23-12-2019	MON	SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER)
163	24-12-2019	TUE	SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER) DISPLAY OF ATTENDANCE AND SESSIONAL MARKS: ME/M.TECH- III SEM
164	25-12-2019	WED	CHRISTMAS- PUBLIC HOLIDAY
165	26-12-2019	THU	BOXING DAY - PUBLIC HOLIDAY
166	27-12-2019	FRI	SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER)
167	28-12-2019	SAT	SUBJECT REGISTRATION BY STUDENTS (BE IV, VI & VIII SEMESTER) ALUMNI MEET 2019
168	29-12-2019	SUN	PUBLIC HOLIDAY
169	30-12-2019	MON	Commencement of instruction : BE IV, VI & VIII SEMESTER
170	31-12-2019	TUE	--
JANUARY,2020			
171	01-01-2020	WED	--
172	02-01-2020	THU	--
173	03-01-2020	FRI	--
174	04-01-2020	SAT	-- GUEST LECTURE : BE VIII SEM
175	05-01-2020	SUN	PUBLIC HOLIDAY
176	06-01-2020	MON	COMMENCEMENT OF THEORY EXAMS : ME/M.TECH - III SEMESTER
177	07-01-2020	TUE	--
178	08-01-2020	WED	--
179	09-01-2020	THU	--
180	10-01-2020	FRI	--
181	11-01-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
182	12-01-2020	SUN	PUBLIC HOLIDAY
183	13-01-2020	MON	--
184	14-01-2020	TUE	--
185	15-01-2020	WED	--
186	16-01-2020	THU	--
187	17-01-2020	FRI	--
188	18-01-2020	SAT	--
189	19-01-2020	SUN	PUBLIC HOLIDAY
190	20-01-2020	MON	--
191	21-01-2020	TUE	--
192	22-01-2020	WED	--
193	23-01-2020	THU	--
194	24-01-2020	FRI	--
195	25-01-2020	SAT	--

VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS), HYDERABAD-500031

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

196	26-01-2020	SUN	REPUBLIC DAY -PUBLIC HOLIDAY
197	27-01-2020	MON	--
198	28-01-2020	TUE	--
199	29-01-2020	WED	--
200	30-01-2020	THU	--
201	31-01-2020	FRI	--
<u>FEBRUARY, 2020</u>			
202	01-02-2020	SAT	--
203	02-02-2020	SUN	PUBLIC HOLIDAY
204	03-02-2020	MON	COMMENCEMENT OF MAKE-UP EXAMS: ME/M.TECH- III SEM IE EVENT : BE IV SEMESTER
205	04-02-2020	TUE	--
206	05-02-2020	WED	--
207	06-02-2020	THU	--
208	07-02-2020	FRI	-- GUEST LECTURE : BE VI SEM
209	08-02-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
210	09-02-2020	SUN	PUBLIC HOLIDAY
211	10-02-2020	MON	I-Internal Test: BE IV, VI & VIII SEMESTER
212	11-02-2020	TUE	I-Internal Test: BE IV, VI & VIII SEMESTER
213	12-02-2020	WED	I-Internal Test: BE IV, VI & VIII SEMESTER
214	13-02-2020	THU	I-Internal Test: BE IV, VI & VIII SEMESTER
215	14-02-2020	FRI	I-Internal Test: BE IV, VI & VIII SEMESTER
216	15-02-2020	SAT	--
217	16-02-2020	SUN	PUBLIC HOLIDAY
218	17-02-2020	MON	--
219	18-02-2020	TUE	--
220	19-02-2020	WED	--
221	20-02-2020	THU	Registration for ME/M.TECH : IV SEM CSI EVENT : BE VI SEMESTER
222	21-02-2020	FRI	--
223	22-02-2020	SAT	--
224	23-02-2020	SUN	PUBLIC HOLIDAY
225	24-02-2020	MON	--
226	25-02-2020	TUE	--
227	26-02-2020	WED	--
228	27-02-2020	THU	EUPHORIA & TECHFEST-2020
229	28-02-2020	FRI	EUPHORIA & TECHFEST-2020
230	29-02-2020	SAT	EUPHORIA & TECHFEST-2020
<u>MARCH, 2020</u>			
231	01-03-2020	SUN	PUBLIC HOLIDAY
232	02-03-2020	MON	--
233	03-03-2020	TUE	--
234	04-03-2020	WED	--
235	05-03-2020	THU	--
236	06-03-2020	FRI	--
237	07-03-2020	SAT	Parent-Teacher Meeting- BE IV, VI & VIII SEMESTER
238	08-03-2020	SUN	PUBLIC HOLIDAY
239	09-03-2020	MON	--
240	10-03-2020	TUE	--
241	11-03-2020	WED	--

VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS), HYDERABAD-500031

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

242	12-03-2020	THU	--
243	13-03-2020	FRI	--
244	14-03-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
245	15-03-2020	SUN	PUBLIC HOLIDAY
246	16-03-2020	MON	--
247	17-03-2020	TUE	--
248	18-03-2020	WED	--
249	19-03-2020	THU	--
250	20-03-2020	FRI	--
251	21-03-2020	SAT	--
252	22-03-2020	SUN	PUBLIC HOLIDAY
253	23-03-2020	MON	--
254	24-03-2020	TUE	--
255	25-03-2020	WED	--
256	26-03-2020	THU	--
257	27-03-2020	FRI	--
258	28-03-2020	SAT	--
259	29-03-2020	SUN	PUBLIC HOLIDAY
260	30-03-2020	MON	--
261	31-03-2020	TUE	--
<u>APRIL, 2020</u>			
262	01-04-2020	WED	-- NATIONAL CONFERENCE
263	02-04-2020	THU	-- NATIONAL CONFERENCE
264	03-04-2020	FRI	--
265	04-04-2020	SAT	--
266	05-04-2020	SUN	BABU JAGVIVAN RAM'S BIRTH DAY--> PUBLIC HOLIDAY
267	06-04-2020	MON	--
268	07-04-2020	TUE	--
269	08-04-2020	WED	--
270	09-04-2020	THU	--
271	10-04-2020	FRI	--
272	11-04-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
273	12-04-2020	SUN	PUBLIC HOLIDAY
274	13-04-2020	MON	II-Internal Test : BE IV, VI & VIII SEMESTER
275	14-04-2020	TUE	DR BR AMBEDHKAR'S BIRTH DAY-PUBLIC HOLIDAY
276	15-04-2020	WED	II-Internal Test : BE IV, VI & VIII SEMESTER
277	16-04-2020	THU	II-Internal Test : BE IV, VI & VIII SEMESTER
278	17-04-2020	FRI	II-Internal Test : BE IV, VI & VIII SEMESTER
279	18-04-2020	SAT	II-Internal Test : BE IV, VI & VIII SEMESTER--> Last date of instruction
280	19-04-2020	SUN	PUBLIC HOLIDAY
281	20-04-2020	MON	PREPARATION HOLIDAYS& PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
282	21-04-2020	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
283	22-04-2020	WED	PREPARATION HOLIDAYS& PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
284	23-04-2020	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER) WORKSHOP – BLOCK CHAIN
285	24-04-2020	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER) WORKSHOP – BLOCK CHAIN
286	25-04-2020	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER) WORKSHOP – BLOCK CHAIN
287	26-04-2020	SUN	PUBLIC HOLIDAY
288	27-04-2020	MON	PREPARATION HOLIDAYS& PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
289	28-04-2020	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
290	29-04-2020	WED	PREPARATION HOLIDAYS& PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
291	30-04-2020	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)

VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS), HYDERABAD-500031

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

MAY,2020

292	01-05-2020	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
293	02-05-2020	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER) GUEST LECTURE : BE II SEM
294	03-05-2020	SUN	PUBLIC HOLIDAY
295	04-05-2020	MON	COMMENCEMENT OF THEORY EXAMS(BE IV, VI & VIII SEMESTER)/ SUMMER VACATION STARTS FOR STAFF
296	05-05-2020	TUE	--
297	06-05-2020	WED	--
298	07-05-2020	THU	--
299	08-05-2020	FRI	LAST DATE FOR SUBMISSION OF DRAFT DISSERTATION : ME/M.TECH IV SEM
300	09-05-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
301	10-05-2020	SUN	PUBLIC HOLIDAY
302	11-05-2020	MON	PRE SUBMISSION VIVA VOCE EXAM: ME/M.TECH IV SEM
303	12-05-2020	TUE	--
304	13-05-2020	WED	--
305	14-05-2020	THU	--
306	15-05-2020	FRI	--
307	16-05-2020	SAT	--
308	17-05-2020	SUN	PUBLIC HOLIDAY
309	18-05-2020	MON	--
310	19-05-2020	TUE	--
311	20-05-2020	WED	--
312	21-05-2020	THU	--
313	22-05-2020	FRI	--
314	23-05-2020	SAT	--
315	24-05-2020	SUN	PUBLIC HOLIDAY
316	25-05-2020	MON	--
317	26-05-2020	TUE	--
318	27-05-2020	WED	--
319	28-05-2020	THU	--
320	29-05-2020	FRI	--
321	30-05-2020	SAT	--
322	31-05-2020	SUN	PUBLIC HOLIDAY

JUNE,2020

323	01-06-2020	MON	--
324	02-06-2020	TUE	--
325	03-06-2020	WED	--
326	04-06-2020	THU	--
327	05-06-2020	FRI	--
328	06-06-2020	SAT	--
329	07-06-2020	SUN	PUBLIC HOLIDAY
330	08-06-2020	MON	--
331	09-06-2020	TUE	--
332	10-06-2020	WED	--
333	11-06-2020	THU	--
334	12-06-2020	FRI	Submission of approved thesis of the students External Evaluation: ME/M.TECH IV SEM
335	13-06-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
336	14-06-2020	SUN	PUBLIC HOLIDAY
337	15-06-2020	MON	--
338	16-06-2020	TUE	--
339	17-06-2020	WED	--
340	18-06-2020	THU	--
341	19-06-2020	FRI	--
342	20-06-2020	SAT	--
343	21-06-2020	SUN	PUBLIC HOLIDAY
344	22-06-2020	MON	Conduct of External Viva-voce : ME/M.TECH- IV SEM
345	23-06-2020	TUE	--

VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS), HYDERABAD-500031

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

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