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) V and VI Semesters With effect from 2019-20 (For the batch admitted in 2017-18) (R-17)

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.
P1O	**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.

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-17)

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

B.E (CSE) V 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								
HS510EH	Finishing School-III: Soft Skills	1	1	-	2	40	30	1
HS040EH	Economics and Finance for Engineers	2	1	-	3	60	40	2
PC510CS	Database Management Systems	3	-	-	3	60	40	3
PC520CS	Computer Networks	3	-	-	3	60	40	3
PC530CS	Web Programming & Services	3	-	-	3	60	40	3
PC540CS	Machine Learning	3	-	-	3	60	40	3
OE5XXXX	Open Elective-IV	3	-	-	3	60	40	3
MC510CS	Finishing School-III: Technical Skills	1	1	-	2	40	30	1
MC040EH	Human Values and Professional Ethics-II	1	-	-	2	40	30	1
PRACTICALS								
PC511CS	Database Management Systems Lab	-	-	2	3	50	30	1
PC521CS	Computer Networks Lab	-	-	2	3	50	30	1
PC531CS	Web Programming & Services Lab	-	-	2	3	50	30	1
PW519CS	Mini Project-I	-	-	2	-	-	30	1
TOTAL		**20**	**3**	**8**		**630**	**450**	**24**
GRAND TOTAL		**31**				**1080**		
Left over hours are allocated for Extra Curricular Activities / Co-Curricular Activities / Sports / Library / CC /RC / TC								

	List of Professional Electives - Stream wise								
		Artificial Intelligence & Data Engineering		Systems & Networks		Software Engineering		Applications	
		Course Code	Title	Course Code	Title	Course Code	Title	Course Code	Title
Sem VI	PE -I	PE610CS	Neural Networks	PE 620CS	Advanced Computer Architecture	PE 630CS	Software Project Management	PE640CS	Image Processing

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

FINISHING SCHOOL-III: SOFT SKILLS

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs/Week): 1:1:0	SEE Marks: 40	Course Code: **HS510EH**
Credits: 1	CIE Marks: 30	Duration of SEE: 2 Hours

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

UNIT 1 QUANTITATIVE APTITUDE - NUMERICAL ABILITY
6 hrs

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

UNIT 2 QUANTITATIVE APTITUDE- ARITHMETIC ABILITY FOUNDATION
6 hrs

- Percentage
- Profit loss and discounts
- Ratio proportions Allegations and mixtures
- Averages

UNIT 3 REASONING ABILITY – GENERAL REASONING PART 1
4 hrs

- Cding decoding
- Directions
- Series completions - Letter, Number & Element Series

UNIT 4 REASONING ABILITY- GENERAL REASONING PART 2
4 hrs

- Analogies
- Classification
- Alphabet test
- Blood Relations

UNIT 5 REASONING ABILITY- ARITHMETIC REASONING
4 hrs

- Mathematical operations
- Ranking
- Ages
- Clocks & Calendars

Learning Resources:

1. scoremore.talentsprint.com

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department Of Humanities And Social Sciences

ECONOMICS AND FINANCE FOR ENGINEERS

SYLLABUS FOR B.E-VI SEMESTER

L:T:P(Hrs/Week): 2:1:0	SEE Marks : 60	Course Code: **HS040EH**
Credits: 2	CIE Marks : 40	Duration of SEE : 03 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of the Course is to equip the prospective engineers with the concepts and tools of economics, finance, cost and taxes for business decisions	1 Decide appropriate price for goods and services with the company's given cost structure for an estimated profit of the companies. 2 Analyze the given financial statements of a firm to Understand its past financial performance in the market. 3 Compare the long term financial investment proposals to decide whether a proposal is financially viable or not through capital budgeting techniques. 4 Identify the suitable sources of finance for the company by considering the functions of major banks such as SBI and RBI. 5 Calculate the impact of the new tax policies on the company's financial structure/ individual incomes.

Unit I

Basics of Economics: Scarcity Definition of Economics - Macro and Micro Economics -Managerial Economics - Meaning of a Firm - Objectives of a Firm - Profit Maximization - Demand Concept -Price Elasticity of Demand - Meaning of Supply -Equilibrium Price and Quantity -Production -Cobb Doughlas Production Function - Economies of Scale.

Unit II

Cost and Price: Cost - Meaning -Classification of Costs -Short run and Long run costs -Cost Sheet - Break even Analysis - Methods of Pricing (Problems on Cost Sheet, Breakeven Analysis and Methods of Pricing can be asked).

Unit III

Banking & Finance: RBI and its role -Commercial Banks - Functions - Capital Budgeting -Discounting and Non discounting Techniques- Working Capital Management - Concepts and Components of Working Capital - Operating Cycle.

UNIT IV

Understanding Financial Statements: Financial Statements- Meaning - Types -Purpose - Ratios (Liquidity, Solvency & Profitability Ratios)(Problems can be asked on Ratios)

Unit V

Direct & Indirect Taxes: Heads of Income - Income from Salaries - Income from House Property - Income from Business - Income from Capital Gains -Income from Other Sources - Latest Tax Rates - GST -CGST - SGST - IGST - GST network.

Learning Resources :

1. S.P.Jain and K.LNarang., —Cost Accounting‖, Kalyani Publishers, Twentieth Edition Revised– 2008.
2. S.P.Jain and K.L Narang., —Financial Accounting‖, Kalyani Publishers –2002.
3. Mehta P.L.,—Managerial Economics: Analysis, Problems and Cases‖, Thirteenth Edition, Sultan Chand and Sons, Nineteenth Edition - 2013.
4. M.Y.Khan and P.K. Jain., —Financial Management – Text, Problems and Cases‖, Mc Graw Hill Education Private Limited, New Delhi.
5. Vinod KSinghania and Kapil Singhania., —Direct Taxes Law and Practice‖, Taxmann Publications, Sixtieth Edition - 2018.
6. Dr,Vinod K Singhania., —Students' Guide to GST and Customs Law‖, Taxmann Publications, Edition - 2018.
7. Muralidharan., —Modern Banking‖, Prentice Hall of India.

Reference Books:

1. M. L. Seth., —Micro Economics‖, Lakshmi Narain Agarwal.
2. Dr. R.P. Rustagi., —Fundamentals of Financial Management‖Taxmann Publications.
3. Dr. D.M. Mithani, —Money Banking International Trade & Public Finance‖, Himalaya Publishing House - 2014.
4. Rajesh., —Banking Theory and Practice‖, Tata Mc Graw Hill Publishing

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 : 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

DATABASE MANAGEMENT SYSTEMS

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC510CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Identify issues involved in the design and implementation of a database system. 2 Understand transaction processing, concurrency control and recovery techniques.	1 Identify the functional components of database management system. Design conceptual data model using Entity Relationship Diagram. 2 Transform a conceptual data model into a relational model. 3 Apply normalization techniques in database design. 4 Apply indexing and hashing techniques for effective data retrieval. 5 Analyze strategies for managing security, backup and recovery of data.

UNIT-I:

Introduction: Database System Application, Purpose of Database Systems, View of Data, Database Languages, Relational Database, Database Design, Data Storage and Querying, Data Mining and Information retrieval, Database Architecture , Database Users and Administrators.

Database Design and E-R Model: Overview of the Design Process, The E-R Model, Constraints, E-R Diagrams, E-R Design Issues, Extended E-R features, Reduction to Relational Schemas.

UNIT-II:

Relational Model: Structure of Relation Database, Fundamental Relational Algebra Operations, Additional Relational Algebra Operations, Extended Relational Algebra Operations, Modification of the Database, Relational Calculus.

Structured Query Language: Introduction, Basic Structure of SQL Queries, Set Operations, Additional Basic Operations, Aggregate Functions, Null Values, Nested Sub queries, Views, Join Expression.

UNIT-III:

Advanced SQL: SQL Data Types, Integrity constraints Authorization, Functions and Procedural Constructs, Recursive Queries, Triggers, JDBC, ODBC and Embedded SQL.

Relational Database Design: Features of Good Relational Designs, Atomic Domains and first Normal form, Decomposition Using Functional Dependencies, functional Dependency Theory and Decomposition using Multivalue Dependencies

UNIT-IV:

Indexing and Hashing: Basic Concepts, Ordered Indices, B+ Tree Index Files, B-Tree Files, Multiple – Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing.

Transaction Management: Transaction concept, Storage Structure, Transaction Atomicity and Durability, Transaction Isolation and Atomicity, Serializability, Recoverability.

UNIT-V:

Concurrency Control: Lock Based Protocols, Timestamp – Based Protocols Validation Based Protocols, Multiple Granularity, Multi version Schemes, Deadlock Handling.

Recovery System: Failure Classification, Storage Structure Recovery and Atomicity, Log Based Recovery, Recovery with Concurrent Transactions, Advanced Recovery Techniques and Remote Backup Systems.

Learning Resources:

1. Abraham Silberschatz, Henry F Korth, Sudharshan S, Database System Concepts, 6th Edition(2011), McGraw-Hill International Edition.
2. Date CJ, Kannan A, Swamynathan S, An Introduction to Database System , 8th Edition(2006) Pearson Education.
3. Raghu Ramakrishna, and Johannes Gehrke, Database Management Systems, 3rd Edition(2003), McGraw Hill.
4. RamezElmasri, Durvasul VLN Somyazulu, Shamkant B Navathe, Shyam K Gupta, Fundamentals of Database Systems, 4th Edition(2006), Pearson Education.
5. Peter Rob, Carlos coronel, Database Systems, (2007), Thomoson.
6. http://nptel.ac.in/courses/106106093/

With effect from the Academic Year 2019-20

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 : 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

COMPUTER NETWORKS

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC520CS**
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 networking concepts to work on networked systems using the existing protocols and evaluate the role of security for developing end user applications	1 Compare OSI and TCP/IP reference models and explain functionalities of Data Link Layer 2 Explain MAC protocols and networking devices. 3 Analyze the design issues of network layer 4 Describe the services of transport layer 5 Apply application layer protocols for providing network services to the end user

UNIT-I:

Introduction: Network Hardware, Network Software, Reference Models, Comparison of the OSI and TCP/IP Reference Models

Physical Layer: Guided transmission media, Wireless transmission media.

Data Link Layer: Design Issues, Error Detection and Correction, Elementary Data Link Layer Protocols, Sliding Window Protocols

UNIT-II:

Multiple Access Protocols : ALOHA, CSMA, Collision free protocols, Ethernet- Physical Layer, Ethernet Mac Sub layer, data link layer switching & use of bridges, learning bridges, spanning tree bridges, repeaters, hubs, bridges, switches, routers and gateways.

UNIT-III:

Network Layer: Network Layer Design Issues.

Routing Algorithms: Shortest path routing, flooding, distance vector routing, link state routing.

IP Addresses: IPV4, Subnetting, Supernetting, CIDR, NAT, IPV6.

Internet Control Protocols: ICMP, ARP, DHCP.

UNIT-IV:

Transport Layer: The Transport Service, Elements of Transport Protocols **The Internet Transport Protocols (TCP and UDP):** UDP, TCP: Introduction, The TCP service model, The TCP protocol, The TCP Segment Header, TCP connection establishment, connection release, TCP sliding window, TCP Timer management, TCP Congestion control, Performance issues.

UNIT-V:

Application Layer: Domain Name System -DNS Name Space, Domain Resource Records, Name Servers, FTP,TELNET

Network Security: Cryptography, Symmetric Key Algorithms: DES, AES, Cipher modes.

Public Key Algorithms: RSA. Digital Signatures, Management of Public Keys.

Learning Resources:

1. Andrew S. Tanenbaum, David J. Wetherall, Computer Networks, 5thEdition Pearson, 2012.
2. Data Communications and Networking, 4th Edition, Behrouz Forouzan, Tata McGraw Hill, 2011
3. James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, 5th Edition, Addison-Wesley, 2012
4. Chwan-Hwa (John) Wu, J. David Irwin, Introduction to Computer Networks and Cyber Security, CRC Press, 2013
5. Alberto Leon-Garcia and Indra Widjaja, Communication Networks: Fundamental Concepts and Key Architectures, Tata McGraw-Hill, 2004.
6. http://nptel.ac.in/courses/106105081/1
7. https://www.youtube.com/watch?v=WabdXYzCAOU

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

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

Duration of Internal 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

WEB PROGRAMMING & SERVICES

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC530CS**
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 Develop web applications using technologies like HTML, XML, JavaScript, Servlet, JSP & PHP. 2 Develop and publish web services.	1 Apply HTML, CSS & JavaScript to design web pages. 2 Develop applications using JDBC API to connect to a database. Design XML documents and apply styles using XSLT. 3 Explain architectural styles and develop dynamic web applications using Servlets. 4 Design and develop server side programs using JSP & PHP. 5 Publish web services and explain serverless computing.

UNIT-I:

Web Basics and Overview: Evolution of the Internet and World Wide Web, Web Basics, Introduction to HTML5, HTML5 Validation Service, Forms, HTML5 Form input Types, Cascading Style Sheets (Part-1).

JavaScript: Introduction to Scripting Functions, Arrays, Objects.

UNIT-II:

XML: XML Basics, XML Document Structure, XML Namespaces, XSL Transformations.

Working with JDBC 4.0: JDBC Drivers, JDBC Processes with java.sql package: Types of Statements, Retrieving Meta information from Database and ResultSet.

JDBC Processes with javax.sql package: JDBC Data Sources, Connection

Pooling, Working with Transactions.

UNIT-III:

JavaEE Platform: Enterprise Architecture Types, JavaEE7 Architecture, Microservices Architecture

Working with Servlet 3.1: Java Servlet API, Servlet Life Cycle, Servlet Implementation, Request and Response Scope.

Handling Sessions: Approaches to Session Tracking, Session Tracking with Java Servlet API.

UNIT-IV:

JSP: Introduction to JSP, Architecture, JSP Lifecycle, JSP Elements: Directives, Scripting Elements, Action Tags, JSP Expression Language.

JSP Tag Extensions: Tag Extensions, Tag Extension API, Writing Tag Handlers.

PHP: Introduction, Conversion between Data Types, Arithmetic Operators, Manipulating Arrays, String Processing, Form Processing and Business Logic, Reading from Database, Using Cookies.

UNIT-V:

Web Services: Web Services Technologies - SOAP, REST, JSON, Web Services Architecture, Publishing and Consuming SOAP-Based WCF Web Service, Publishing and Consuming REST-Based XML Web Service, Publishing and Consuming REST- Based JSON Web Service.

Serverless Computing: AWS services, AWS Lambda, Use-Cases, Web application Deployment in Azure, Docker Container.

Learning Resources:

1. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, Internet & World Wide Web How to Program, 5th Edition, Pearson Education.
2. Java Server Programming Java EE7 (J2EE 1.7): Black Book, (2014), Dreamtech Press.
3. Uttam K. Roy, Web Technologies, (2012), Oxford Publishers.
4. Robert W. Sebesta, Programming the World Wide Web, 7th Edition (2014), Pearson Education.
5. https://www.w3schools.com/html/
6. https://docs.oracle.com/javaee/7/tutorial/index.html
7. https://www.javatpoint.com/php-tutorial
8. https://docs.microsoft.com/en-us/aspnet/web-forms/index
9. https://aws.amazon.com/lambda/
10. https://www.docker.com/

With effect from the Academic Year 2019-20

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

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

Duration of Internal 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

MACHINE LEARNING

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC540CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVE	**COURSE OUTCOMES** On completion of the course, students will be able to
To formulate machine learning problems corresponding to an application.	1 Explain the basics of concept learning and inductive learning. 2 Design decision tree neural network solve classification problems. 3 Comprehend probabilistic methods for learning. 4 Explain the instance based learning and reinforcement learning. 5 Build optimal classifiers using Genetic Algorithm and deep learning.

UNIT-I:

Introduction: Well-Posed Learning Problems, Designing a Learning System, Issues in Machine Learning.

The Concept Learning: A concept Learning Task, General –to- Specific Ordering of Hypothesis, Find-S, The List-Then-Eliminate Algorithm, Candidate Elimination Learning Algorithm, Inductive bias.

UNIT-II:

Decision Tree Learning: Introduction, Decision Tree Representation, The Basic Decision Tree Algorithm, Hypothesis space search in Decision Tree Learning, Issues in Decision Tree Learning.

Artificial Neural Networks: Introduction, Neural Network Representation, Perceptrons, Gradient descent and the Delta rule, Multilayer Networks, Derivatives of back propogation rule. Back propagation algorithm-Convergence, Generalization.

Evaluating Hypotheses: Estimating hypotheses Accuracy, Basics of sampling theory, Comparing learning algorithms.

UNIT-III:

Bayesian Learning: Introduction, Bayes Theorem, Concept Learning, Bayes Optimal Classifier, Naïve Bayes Classifier, Bayesian Belief networks, EM algorithm.

Computational Learning Theory: Introduction, Probably Learning an Approximately Correct Hypothesis, Sample Complexity for Finite Hypothesis Spaces, Sample Complexity for Infinite Hypothesis Spaces, The Mistake Bound Model of Learning.

UNIT-IV:

Instance-based Learning: Introduction, k-Nearest Neighbor-Distance Weighted Nearest Neighbor Algorithm, Locally Weighted Regressions, Radial Basis Functions, Case –based learning.

Reinforcement Learning: Introduction, Learning Task, Q Learning.

UNIT-V:

Genetic Algorithms: Motivation, Genetic Algorithm-Representing Hypotheses, Genetic Operators, Fitness Function and Selection, An Illustrative Example, Hypothesis Space Search, Genetic programming, Models of Evolution and Learning.

Deep Learning: Convolutional neural networks, recurrent neural networks.

Learning Resources:

1. Tom Mitchell, —Machine Learning||, McGraw-Hill Science, First edition.
2. Christopher Bishop, —Pattern Recognition and Machine learning||, Springer (2006).
3. Stephen Marsland,||Machine Learning –an algorithmic perspective||, CRC Press.
4. Bengio, Yoshua, Ian J. Goodfellow, and Aaron Courville, "Deep learning ", An MIT Press book in preparation (2015).
5. Daniela witten, Trevor Hastie Robert Tibshirani and Gareth James, —An introduction to statistical Learning with applications in R, Springer 2013
6. https://onlinecourses.nptel.ac.in/noc18_cs26/preview
7. https://www.coursera.org/learn/machine-learning

8. http://www.holehouse.org/mlclass
9. https://in.udacity.com/course/intro-to-machine-learning--ud120
10. https://github.com/JannesKlaas/MLiFC

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

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

Duration of Internal 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

FINISHING SCHOOL-III: TECHNICAL SKILLS

PROGRAMMING WITH DATA STRUCTURES

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week):3:0:0	SEE Marks : 60	Course Code : MC510CS
Credits : 3	CIE Marks : 40	Duration of SEE : 2 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Identify and use appropriate data structure for a given computational problem.	1 Choose suitable non linear data structure to design a solution to a problem. 2 Select the hashing technique to perform dictionary operations. 3 Explain operations on Efficient Binary Search Trees and Multiway Search Trees.

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

Graphs: The Graph ADT, Elementary graph operations, Breadth First Search (BFS), Depth First Search (DFS), Minimum Cost Spanning Trees- Kruskal's Algorithm, Prim's Algorithm.

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

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. Tanenbaum A. M ,Langsam Y. Augenstein M. J, Data Structures using C, Second Edition (2008), Pearson.
4. Thomas H. Cormen, Charles E. Leiserson, Ronald L Rivest, Clifford Stein, Introduction to Algorithms, Third Edition(2009), MIT Press
5. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-006-introduction-to-algorithms-fall-2011/lecture-videos
6. http://nptel.ac.in/courses/106106127/
7. http://www.nptel.ac.in/courses/106102064

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1	No. of Internal Tests	:	1	Max. Marks for each Internal Test	:	30

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 Humanities & Social Sciences

HUMAN VALUES AND PROFESSIONAL ETHICS-II

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

L:T: P(Hrs/Week): 1:0:0	SEE Marks : 40	Course Code: **MC040EH**
Credits:1	CIE Marks : 30	Duration of SEE : 2 Hours

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

PERSONAL ETHICS AND PROFESSIONAL ETHICS

a. **PERSONAL ETHICS**: A person ̦s personal or self-created values and codes of conduct. Civic virtues and Civic sense.

b. NEED FOR ETHICAL CODES

Code of Professional Ethics- Observance of the code, Obligations towards the Features of professional ethics: Openness, Transparency, Privacy, Impartiality, Practicality, Loyalty.

Profession, Ethics and Information Security, Deterring Unethical and Illegal Behaviour, Work ethics.

UNIT-2 GENDER SENSITISATION

a. Social issues regarding women - Female infanticide and foeticide, dowry & property rights, violence against women.
b. Impact of globalization on the status of women - Political and legal empowerment
c. Women at work- Success stories.

{Post independence and current movements in India (Telangana movement 1948-50, Chipko movement 1973, Navnirman movement 1974, question of Representation in Politics)
Change makers - Shashi Deshpande, Taslima Nasreen, Kumkum Sangari, Veena Mazumdar, Neera Desai.

Women's Studies in India--UGC's initiatives -- Centers for Women's Studies- Capacity building for Women leaders in education—Women development cells-- Women's Studies in the XIth Plan.

Women role models -- Case studies– Indira Gandhi, Kiran Mazumdar, Kiran Bedi, Ela Bhatt, Mother Teresa, PT Usha, Rukminidevi Arundale, Annie Beasant, Sarojini Naidu, Medha Padhkar, Kalpana Chawla, etc.}

MODE Of DELIVERY

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

Relevant Websites, CD's and Documentaries

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

Learning Resources:

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

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

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

Duration of Internal Tests : 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

DATABASE MANAGEMENT SYSTEMS LAB

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code : **PC511CS**
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 SQL commands on a database. 2 Develop an application using forms, reports and PL/SQL.	1 Design and implement a database schema. 2 Apply DDL, DML, DCL and TCL commands on a database. 3 Create database by applying normal forms. 4 Implement PL/SQL programs for creating stored procedures, cursors & triggers. 5 Design and implement an application using forms and reports.

Programming Exercise:

I. SQL

1. Creation of database (Exercising the commands like DDL, DML, DCL and TCL)
2. Creating tables using combination of constraints.
3. Usage of Stored Functions.
4. Exercising all types of Joins.
5. Creating tables in I Normal, II Normal, III Normal Form.
6. Exercising complex Queries.
7. Usage of file locking, Table locking facilities in Applications.

II. PL/SQL

1. Demonstration of Blocks, Cursors, functions and Packages.
2. Demonstrate Exception Handling.
3. Usage of Triggers to perform operation on Single and Multiple Tables.
4. PL/SQL Procedures for data validation.

III. FORMS

1. Creation of forms for colleges Information System, Library Information System and Recruitment Cell.

IV. REPORTS

1. Creation of Reports based on different queries.
2. Creation of full-fledged Database Application.

Learning Resources:

1. Ivan Bayross, SQL, PL/SQL, The Programming Language of Oracle,4th Edition, PBP Publications.
2. NileshShah, Database Systems Using Oracle, 2nd Edition(2007), PHI.
3. Rick F Van der Lans, Introduction to SQL, 4thEdition(2007), Pearson Education.
4. Benjamin Rosenzweig Elena Silvestrova, Oracle PL/SQL by Example, 3rdEdition(2004), Person Education.
5. Albert Lulushi, Oracle Forms Developer's Handbook, 1st Edition(2006), Pearson Education.
6. https://www.lynda.com/Access-tutorials/Welcome/195854/373426-4.html

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			

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

COMPUTER NETWORKS LAB

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code : **PC521CS**
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 major functions of TCP/IP protocol stack with suitable algorithms. 2 Develop client server application using socket API.	1 Implement functionalities of TCP/IP protocol stack 2 Develop iterative and concurrent echo server using socket API. 3 Implement cryptographic algorithms. 4 Design wired and wireless topologies using NS3. 5 Simulate networking protocols using NS3.

Programming Exercise:

1. Understanding and using the following commands: ifconfig, netstat, ping, arp, telnet, tftp, ftp, nslookup and dig.
2. Implementation of Data Link Framing Methods- Bit, Byte and Character Stuffing.
3. Implementation of 16-bit CRC Error Detection Technique.
4. Implementation of Sliding Window Protocol.
5. Implementation of Dijkstra's Algorithm for computing the shortest path in a graph.
6. Implementation of Distance vector routing algorithm.
7. Implementation of Iterative and Concurrent Echo Server using Connection Oriented Protocol (TCP) and Connection Less Protocol (UDP).
8. Implementation of Leaky Bucket congestion control algorithm.

9. Implementation of Establishing a Shared key: The Difffie-Hellman key exchange.
10. Implementation of RSA algorithm for Encryption and Decryption in C.
11. Simulate a three nodes point – to – point network with duplex links between them. Set the queue size and vary the bandwidth and find the number of packets dropped.
12. Simulation of routing protocols.

Learning Resources:

1. W. Richard Stevens, Unix Network Programming – The Sockets Networking, Volume I – 3rd Edition (2003), Pearson Education, India
2. Andrew S. Tanenbaum, David J. Wetherall, Computer Networks, 5th Edition (2012), Pearson Education, India
3. Cryptography & Network Security: Principles and Practices, 6th Edition (2013), Pearson India
4. James F. Kurose, Computer Networking: A Top-Down Approach, 5th Edition (2012), Pearson Education.
5. Data Communications & Networking, Behrouz. A. Forouzan, 5th Edition (2012), Tata McGraw Hill.
6. https://www.isi.edu/nsnam/ns/ With effect from the A.Y 2018-19

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			

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

WEB PROGRAMMING & SERVICES LAB

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code : **PC531CS**
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 Develop web applications. 2 Publish web services.	1 Design a website using HTML, CSS, XML & JavaScript 2 Develop dynamic web applications using Servlets. 3 Develop dynamic web applications using JSP's, PHP with DB connectivity. 4 Create and publish Web Services. 5 Develop and deploy web application on to the cloud

Programming Exercise:

1. Creation of Static Web Site using HTML.
2. Creation of Static Web Site using HTML Forms.
3. Apply CSS to the Static Web Site.
4. Validation of Static Web Site using Java Script.
5. Demonstration of XML, XSLT.
6. Providing data store support using JDBC.
7. Creation of dynamic content in a Web Site using Servlets.
8. Demonstration of Servlet Collaboration in Web Applications.
9. Demonstrate Session handling in Web Applications using Cookies.
10. Demonstrate Session handling in Web Applications using HttpSession.

11. Creation of dynamic content in a Web Application using JSP.
12. Creation of dynamic content in a Web Application using PHP.
13. Publishing and Consuming a Web Service using SOAP.
14. Publishing and Consuming a Web Service using REST.
15. Demonstration of using AJAX in Web Application.
16. Develop a web application and deploy on to the cloud.
17. Develop a web application for given problem statement.

Learning Resources:

1. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, Internet & World Wide Web How to Program, 5th Edition, Pearson Education.
2. Java Server Programming Java EE7 (J2EE 1.7): Black Book, (2014), Dreamtech Press.
3. Uttam K. Roy, Web Technologies, Oxford Publishers.
4. Robert W. Sebesta, Programming the World Wide Web, 7th Edition (2014), Pearson Education.
5. https://www.w3schools.com/html/
6. https://docs.oracle.com/javaee/7/tutorial/index.html
7. https://spring.io/docs
8. https://azure.microsoft.com/

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			

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

MINI PROJECT-I

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : --	Course Code : **PW519CS**
Credits : 1	CIE Marks : 30	Duration of SEE : --

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Develop an application in the relevant area of Computer Science. 2 Learn contemporary technologies.	1 Review the literature survey to identify the problem. 2 Design a model to address the proposed problem. 3 Develop and test the solution. 4 Demonstrate the work done in the project through presentation and documentation. 5 Adapt to contemporary technologies.

The students are required to carry out mini projects in any areas such as Data Structures, Microprocessors &interfacing, Database Management Systems, Operating Systems and Design & Analysis of Algorithms.

Students are required to submit a report on the mini project at the end of the semester.

With effect from the Academic Year 2019-20

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

Dept	Title	Code	credits
Civil	Remote Sensing and GPS	OE510CE	3
ECE	Mathematical Programming for Engineers	OE510EC	3
ECE	Sensors for Engineering Applications	OE520EC	3
EEE	Solar Power and Applications	OE510EE	3
Mech.	Optimization Methods	OE510ME	3
Mech.	Introduction to Robotics	OE520ME	3
Maths.	Numerical Methods	OE510MA	3
Maths.	Discrete Mathematics for Engineers	OE520MA	3
Physics	Vacuum Technology and Applications	OE510PH	3
H&SS	Technical Writing And Professional Presentations	OE010EH	3

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

REMOTE SENSING AND GPS

(Open Elective-IV)

SYLLABUS FOR B.E. V SEMESTER

L : T : P (Hrs./week):3:0: 0	SEE Marks:60	Course Code: **OE510CE**
Credits : 3	CIE Marks:40	Duration of SEE:3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to	Upon the completion of the course, students are expected to
1. To provide fundamental knowledge on geo spatial technology such as Remote sensing and GPS	1. Understand the characteristics of the electromagnetic radiation and their interactions with the atmosphere and surface features for better analysis and interpretation of the remote sensing data. 2. Explain the various remote sensing systems, satellite characteristics and elements of visual interpretation techniques 3. Describe the fundamental theory and concepts of the Global Positioning System to provide 3D positioning with great accuracy. 4. Compute errors and biases in GPS measurements and understand the differences between point and relative GPS positioning. 5. Present the applications of remote sensing and GPS in various fields

Unit I: Introduction and Basic Concepts of Remote Sensing

Introduction, Basic concepts of remote sensing, Airborne and space born sensors, Passive and active remote sensing, EMR Spectrum, Energy sources and radiation principles, Energy interactions in the atmosphere, Energy interactions with earth surface features, Atmospheric windows, Spectral reflectance curves

Unit II: Remote Sensing Systems

Satellites and orbits, Polar orbiting satellites, Image characteristics and different resolutions in Remote Sensing, Multispectral, thermal and hyperspectral remote sensing. Some remote sensing satellites and their

features, Map and Image, color composites, introduction to digital data, elements of visual interpretation techniques.

Unit III: Global positioning Systems (GPS)

Overview of GNSS and Introduction to GPS, GLONASS, GALILEO, COMPASS, IRNSS systems

GPS: Basic concepts, Functional system of GPS – Space segment, control segment and user segment, Working principle of GPS, Signal structure and code modulation, Pseudo-range measurements and navigation message

Unit IV : Errors and Positioning methods of GPS

Errors and biases in GPS measurements, Accuracy of navigation position: UERE and DOP, Intentional degradation of GPS signals: Selective availability (SA) and Anti-spoofing (AS) Differential GPS: Space based augmentation systems (e.g., SBAS, GAGAN) and Ground based augmentation systems (e.g., WASS, EGNOS)

GPS Carrier Phase measurements: Single Differencing, Double Differencing and Triple Differencing in GPS measurements.

Surveying with GNSS: Point positioning, Relative positioning, Static and Kinematic positioning.

Unit V : Applications of remote sensing and GPS

Applications of remote sensing and GPS in various fields, Integration of remote sensing, GPS and GIS.

Learning Resources:

1. James B. Campbell & Randolph H. Wynne., Introduction to Remote Sensing, The Guilford Press, 2011
2. Lillesand, Kiefer, Chipman., Remote Sensing and Image Interpretation, Seventh Edition, 2015
3. Leick, A., GPS Satellite Survey, John Wiley: NJ, 2015
4. Hofmann, B., Lichtenegger H. and Collins J., Global Positioning System: Theory and Practice, Springer: Berlin, 2011.
5. Basudeb Bhatta, Remote Sensing and GIS, Oxford University Press, 2011.
6. Hofmann-Wellenh of, Bernhard, Lichtenegger, Herbert, Wasle, Elmar, GNSS – GPS, GLONASS, Galileo and more, 2013

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

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

Duration of Internal Tests : 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

MATHEMATICAL PROGRAMMING FOR ENGINEERS

(OPEN ELECTIVE-IV)

SYLLABUS FOR B.E. V - SEMESTER

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **OE510EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

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

UNIT - I : Introduction:

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

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

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

UNIT - II : Scripts and Functions

Script Files, Function Files, Debugging methods in MATLAB.

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

UNIT - III : Numerical Methods Using MATLAB

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

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

UNIT - IV : Nonlinear Equations

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

UNIT - V :

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

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

Learning Resources:

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

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SENSORS FOR ENGINEERING APPLICATIONS (OPEN ELECTIVE-IV)

SYLLABUS FOR B.E. V - SEMESTER

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **OE520EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. The student will come to know the various stimuli that are to be measured in real life instrumentation. 2. He will be able to select the right process or phenomena on which the sensor should depend on 3. He will be aware of the various sensors available for measurement and control applications.	On completion of the course, students will be able to 1. Appreciate the operation of various measuring and control instruments which they encounter in their respective fields. 2. Visualize the sensors and the measuring systems when they have to work in areas of interdisciplinary nature and also think of sensors and sensors systems when for a new situation they encounter in their career 3. Identify and select the right process or phenomena on which the sensor should depend on. 4. Know various stimuli that are to be measured in real life instrumentation.

UNIT - I

Introduction: What is a sensor and what is a transducer? Electrical sensor – need for sensors in the modern world. Different fields of sensors based on the stimuli - various schematics for active and passive sensors.

General characteristics and specifications of sensors – Implications of specifications uses of sensors – measurement of stimuli - block diagram of sensor system. Brief description of each block.

UNIT – II

Sensors for mechanical systems or mechanical sensors - Displacement - acceleration and force - flow of fluids – level indicators – pressure in fluids – stress in solids. Typical sensors - wire and film strain gauges, animometers, piezo electric and magnetostrictive accelerometers, potentiometric sensors, LVDT.

UNIT – III

Thermal sensors – temperature – temperature difference – heat quantity. Thermometers for different situation – thermocouples thermistors – color pyrometry.

Optical sensors: light intensity – wavelength and color – light dependent resistors, photodiode, photo transistor, CCD, CMOS sensors.

Radiation detectors: radiation intensity, particle counter – Gieger Muller courter (gas based), Hallide radiation detectors.

UNIT – IV

Magnetic sensors: magnetic field, magnetic flux density – magneto resistors, Hall sensors, super conduction squids.

Acoustic or sonic sensors: Intensity of sound, frequency of sound in various media, various forms of microphones, piezo electric sensors.

UNIT – V

Electrical sensors: conventional volt and ammeters, high current sensors, (current transformers), high voltage sensors, High power sensors.

High frequency sensors like microwave frequency sensors, wavelength measuring sensors.

MEMs and MEM based sensors.

Learning Resources :

1. Doebelin, —Measurement Systems: Application and Design‖, McGraw Hill Kogakusha Ltd.
2. Julian W. Gardner, Vijay K. Varadan, Osama O. Awadelkarim —Microsensors, MEMS and Smart Devices‖, New York: Wiley, 2001.
3. Henry Bolte, —Sensors – A Comprehensive Sensors‖, John Wiley.

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Solar Power and Applications

(Open Elective – IV)

SYLLABUS FOR B.E. V-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks: 60	Course Code: **OE510EE**
Credits :3	CIE Marks: 40	Duration of SEE: 3Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To impart the basics of solar energy harnessing and solar panel and array.	1. Compare different energy resources.
	2. Identify and choose proper type of meter for solar radiation measurement.
	3. Use proper solar thermal system according to the load requirements.
	4. Categorize and compare photovoltaic cells.
	5. Apply the knowledge of solar energy.

Unit – I: Fundamentals of Energy Sources:

Oil crisis of 1973, Classifications of Energy Resources, Importance of Non-conventional energy sources, Advantages-disadvantages and salient features of Non-conventional energy sources.

Unit – II: Solar Energy Basics:

Sun as a source of energy, the Earth, Radiation Spectrums, Extraterrestrial and Terrestrial Radiations, Depletion of solar Radiation, Pyranometer, Pyrheliometer, Sunshine Recorder.

Unit – III: Solar Thermal Systems:

Solar Collectors, Solar Water Heater, Solar Passive space – heating and cooling systems, Solar Cookers, Solar furnaces, Solar thermal water pump, Vapour compression refrigeration and Solar pond Electric power plant.

Unit – IV: Solar Photovoltaic Systems:

Solar Cell fundamentals, Cell characteristics, Cell classification, Module, Panel and Array, Maximizing the Solar PV output and load matching, MPPT.

Unit – V: Solar PV systems & Applications:

Solar PV system classification - Stand-Alone Solar PV system and Grid-Interactive Solar PV system. Applications - Water Pumping, lighting, medical refrigeration, village power and Telecommunication.

Learning Resources:

1. B H Khan, Non-Conventional Energy Resources, 2nd Edition, Tata McGraw Hill.
2. G. D. Rai, Non-Conventional Energy Sources, 13th Reprint 2014, Khanna Publications.

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

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

Duration of Internal Test: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mechanical Engineering

OPTIMIZATION METHODS (OE-IV)

SYLLABUS FOR B.E.V-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **OE510ME**
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 the course is to understand Linear & non-linear programming, transportation modeling , CPM & PERT for project scheduling and control, and application of various optimization techniques for respective field engineering (Inter disciplinary)	1 optimization of resources in multi disciplinary areas through linear programming under different conditions. 2 sensitivity analysis of a linear programming problem as per customer requirements tosuit various Organizations. 3 minimization of total cost to apply for transportation techniques for the transhipment of Goods and products and Implement techniques like project management to analyze about material management. 4 optimization of resources in multi disciplinary areas through non-linear programming under different conditions.

UNIT-I: OPTIMIZATION-AN OVERVIEW

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

UNIT-II: ADVANCED TOPICS IN LINEAR PROGRAMMING

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

UNIT-III

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

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

UNIT-IV

Non linear programming problems: Optimization methods for single variable, multivariable functions, Maxima-Minima

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

UNIT-V

Non Linear - Unconstrained Optimization

classification, scaling of design variables, Random search methods, Univeriate search, pattern Directions, Hook Jeeves, Powel method, Rosenbrock method.

Learning Resources:

1. Singiresu S.Rao, —Engineering optimization- Theory and Practice‖, 4th Edition, John Wiley and Sons, 2009.
2. NVS Raju, —Optimization methods for Engineers ", PHI Learning Pvt. Ltd., 2014.
3. Prem Kumar Gupta and Dr. DS Hira, —Operations Research", S.Chand & Company Pvt. Ltd., 2014.
4. R. Paneerselvam, —Operations Research‖, PHI Learning Pvt Ltd., 2009.
5. Kalyanmoy Deb, Optimization for Engineering Design- algorithms and examples, PHI Pvt. Ltd., 1st Edition 2003, Delhi.

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

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mechanical Engineering

INTRODUCTION TO ROBOTICS (OE-IV)

SYLLABUS FOR B.E.V-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **OE520ME**
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 the course is to identify robots and their peripherals for satisfactory operation and control of robots for industrial and non-industrial applications.	1 understand the anatomy of the robot and various robot configurations for it's selection depending on the task. 2 classify the end effectors , understand different types of joints, various types of mechanical actuation and robot drive systems for carrying out the assigned job effectively. 3 analyze a planar manipulator through forward kinematics and understand the control of robot manipulator for better reliability and efficiency. 4 Classify various sensors used in robots for proper selection to an application. 5 summarize various industrial and non-industrial applications of robots for their selection to a particular task.

UNIT-I : ROBOT BASICS

Robot-Basic concepts, Need, Law, History, Anatomy, specifications.
Robot configurations-cartesian, cylindrical, polar ,articulated and SCARA.
Robot wrist mechanism, Precision and accuracy of robot.

UNIT-II : ROBOT ELEMENTS

End effectors-Classification, Types of Mechanical actuation, Gripper design, Robot drive system types: Electrical, pneumatic and hydraulic. Position and velocity feedback devices, Robot joints and links-Types, Motion interpolation.

UNIT-III : ROBOT KINEMATICS AND CONTROL

Robot kinematics – Basics of direct and inverse kinematics, Robot trajectories, 2D and 3D Transformation- Scaling, Rotation and Translation, Homogeneous transformation. D-H matrix. Forward kinematics for a 2-link RR planar manipulator.

Control of robot manipulators – Point to point and Continuous Path Control. Robot programming.

UNIT-IV : ROBOT SENSORS

Sensors in robots – Touch sensors-Tactile sensors – Proximity and range sensors. Force sensors, Light sensors, Pressure sensors.

Introduction to Machine Vision and Artificial Intelligence.

UNIT-V : ROBOT APPLICATIONS

Applications of robots in Industries, Medical, Household, Entertainment, Space, Underwater, Defense, and Disaster management.

Applications of Micro and Nanorobots, Future Applications of robots.

Learning Resources:

1. Mikell P. Groover, Mitchell Weiss, Roger N Nagel and Nicholas G Odrey, —Industrial Robotics Technology, Programming and Applications‖, Tata McGraw-Hill Publishing Company Limited, 2nd Edition , 2008.
2. Deb. S.R and Sankha Deb, "Robotics Technology and Flexible Automation", Tata McGraw Hill Publishing Company Limited, 2nd Edition, 2010.
3. Klafter R.D, Chmielewski T.A, and Negin. M, —Robotic Engineering: An Integrated Approach‖, Prentice Hall of India Pvt. Ltd., 1994.
4. K.S. Fu,R.C. Gonzalez and C.S.G. Lee , —Robotics control, sensing, vision and intelligence‖,Tata Mc Graw-Hill Publishing Company Limited, 2008
5. R.K. Mittal and I.J. Nagrath -Robotics and Control‖, Tata McGraw-Hill Publishing Company Limited,2003.

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

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mathematics

NUMERICAL METHODS

(Open Elective)

SYLLABUS FOR B.E. V-SEMESTER

(for CSE & IT only)

L:T:P (Hrs./week): 3:0:0	SEE Marks :60	Course Code: **OE510MA**
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** various numerical methods to solve Algebraic and Transcendental equations.	1 **Apply** numerical methods to solve Algebraic and Transcendental equations which cannot be solved by traditional algebraic methods
2 **Understand** the methods to solve algebraic equations.	2 **Solve** simultaneous algebraic equations using direct and iteration methods.
3 **Understand** the numerical methods in interpolation and extrapolation.	3 **Use** various numerical methods in interpolation and extrapolation.
4 **Understand** numerical solutions of ordinary differential equations	4 **Find** numerical solutions of ordinary differential equations.
5 **Understand** various numerical methods for evaluation of definite and double integrals.	5 **Apply** various numerical methods for evaluation of definite and double integrals.

UNIT-I:

Solution of Algebraic and Transcendental equations:

Errors in computation-Types of errors- Useful rules for estimating errors-Intermediate value property of equations-Solution of Algebraic and Transcendental equations: Bisection method, Newton-Raphson method Regula-Falsi method.

UNIT-II:

Solution of linear system of equations:

Direct methods- Gauss elimination method- Factorization method- Iterative methods: Jacobi's Iteration method- Gauss - Seidel Iteration method-Ill-conditioned system of equations.

UNIT-III:

Numerical differences

Introduction to finite differences -Central differences interpolation-Gauss's forwards and backward difference formulae-Stiriling's formula- Bessel's formula.

UNIT-IV:

Numerical Integration

Inroduction to Numerical Integration - Boole's Rule – Weddle's Rule – Evaluation of Double Integrals using Numerical Methods – Trapezoidal Rule - Simpson's Rule.

UNIT-V:

Numerical Solutions of Ordinary Differential Equations

Numerical Solutions of Ordinary Differential Equations: Euler's Method - Modified Euler's Method – Predictor–Corrector methods- Milne's method – Adam's Bashforth method.

Learning Resources:

1. Text Books:

1. Numerical methods in engineering and science by B.S.Grewal, Khanna publishers
2. Advanced Engineering Mathematics by R.K.Jain & S.R.K.Iyengar, Narosa publishing house.

2. Reference Books:

1. Numerical Analysis by S.S.Sastry, PHI Ltd.

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

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

DEPARTMENT OF MATHEMATICS

(OPEN ELECTIVE-IV)

DISCRETE MATHEMATICS FOR ENGINEERS

B.E., V- Sem., (CBCS)

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **OE520MA**
Credits :03	CIE Marks:40	Duration of SEE: 03Hours

COURSE OBJECTIVES	**COURSE OUTCOMES**
The course will enable the students to:	***At the end of the course students will be able to:***
1. **Understand** Propositions and their equivalences, predicates and quantifiers and learn various proof strategies. 2. **Study** the concepts of number theory such Modular Arithmetic, Congruences and basic cryptography etc., 3. **Understand** the basics of counting, combinatory, and various methods of solving Recurrence relations. 4. **Understand** Relations, Equivalence relations, Posets and Hasse diagrams. 5. **Analyze** the concepts of Graphs.	1. **Use logical notation** to define and reason about **fundamental mathematical concepts and synthesize induction hypothesis and simple Induction proofs**. 2. **Prove elementary properties of modular arithmetic** and basic cryptography and apply in Computer Science. 3. **Calculate number of possible outcomes** of elementary combinatorial processes such as permutations and combinations **Model and analyze computational processes** using analytic and Combinatorial methods. 4. **Prove** whether a given relation is an equivalence relation/ poset and will be able to draw a Hasse diagram. 5. **Apply** graph theory models of data structures and to solve problems of connectivity**.**

UNIT – I Logic: Logic- Logical connectives- Propositional equivalences– Predicates and quantifiers – Nested quantifiers.

Mathematical Reasoning, Induction: Proof Strategy- Methods of Proofs- Mathematical Induction- Second Principle of Mathematical Induction.

UNIT – II Number Theory: The Integers and Division- Division Algorithm- Fundamental Theorem of Arithmetic –Modular Arithmetic-Integers and Algorithms- Euclidean Algorithm -Linear Congruences- Fermat's Little Theorem

UNIT – III Counting: Basics of counting- Pigeonhole principle- Permutations and combinations – Pascal's Identity- Vandermonde's Identity- Generalized Permutations and combinations.

Advanced Counting Techniques: Recurrence relations: Solving Recurrence Relations- Linear Homogeneous and Non-Homogeneous Recurrence relations.

UNIT – IV Relations: Relations – Properties -Representing relations - Equivalence Relations - Partial Orderings- Poset.

UNIT –V Graph Theory: Introduction- Types of graphs- Graph terminology- Basic theorems- Representing Graphs and Graph Isomorphism - Connectivity- Euler and Hamiltonian paths -

Learning Resources:

1. Kenneth H.Rosen – Discrete Mathematics and its application – 5th edition, Mc Graw – Hill, 2003.
2. Joel. Mott. Abraham Kandel, T.P.Baker, Discrete Mathematics for Computer Scientist & Mathematicians, Prentice Hall N.J., 2nd edn, 1986.
3. Discrete and Combinatorial Mathematics by Ralph P. Grimaldi , Pearson International
4. J.P.Trembly, R.Manohar, Discrete Mathematical Structure with Application to Computer Science, Mc Graw- Hill – 1997.
5. R.K. Bisht, H.S.Dhami - Discrete Mathematics, Oxford University Press, 2015.
6. http://mathworld.wolfram.com/topics
7. http://www.nptel.ac.in/course.php

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

Ibrahimbagh, Hyderabad-500 031, Telangana State

DEPARTMENT OF PHYSICS

Open elective Course

VACUUM TECHNOLOGY AND APPLICATIONS

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **OE510PH**
Credits :03	CIE Marks:40	Duration of SEE: 03Hours

Course objectives	***Course outcomes***
Students will be able to learn	***At the end of the course students will be***
1. Learn basic terms and definitions of vacuum technology 2. Acquire knowledge on vacuum pump parameters 3. Gain insight of various vacuum production methods 4. Learn measurement of vacuum 5. Known various applications of vacuum.	1. Define various vacuum ranges and terms related to vacuum technology 2. List out vacuum pump parameters 3. Narrate working of various types of vacuum pumps 4. Explain working of different vacuum measuring devices 5. List our application and use of vacuum in various fields of engineering and technology.

UNIT-I: FUNDAMENTALS OF VACUUM

Vacuum Nomenclature and Definitions, units of vacuum, Vacuum ranges, Types of flow: turbulent flow, viscous or laminar flow, molecular flow, Knudsen flow Vacuum Physics-out gassing, Mean free path of the molecules, adsorption, desorption, evaporation theory-rate of evaporation, Hertz- Knudsen equation, types of evaporation.

UNIT-II: VACUUM TERMINOLOGY

Methods of production of vacuum, vacuum pump function basics, throughput, pumping speed, conductance, evacuation rate, fore vacuum and high-vacuum pumping, Pump Choice, valve less, valved pumping system, Positive Displacement Vacuum Pumps, Momentum Transfer Vacuum Pumps, Entrapment Pumps, traps and baffles. Function of the oil in oil-sealed vacuum pumps. Effects of condensable vapours on mechanical pump performance, Water vapour tolerance of a pump, Back-streaming

UNIT-III: VACUUM PUMPS

Systems construction and working of vacuum pumps: Roots vacuum pumps, Rotary vane pump, multi stage rotary pumps, diffusion pump, Turbomolecular pumps, cryo-pump, ion getter pumps,

UNIT-IV: VACUUM MEASUREMENT

Overview of gauges, direct reading and indirect reading gauges, classification of pressure gauge, Vacuum gauges: thermocouple gauge, Pirani gauge, cold cathode and hot cathode ionization gauge, Penning gauge, leak detection, Leak detection methods-leak rate.

UNIT-V: VACUUM APPLICATIONS

Deposition of thin films, Vacuum technology in the semiconductor industry, Vacuum technology in metallurgical processes, Vacuum technology in the chemical industry,

SUGGESTED BOOKS:

- Dorothy M. Hoffman and Bawa Singh, Handbook of Vacuum Science and Technology, Academic Press, 1998
- M. N. Avadhanulu and P.G. Kshirsagar, Textbook of Engineering Physics, Revised Edition, S.Chand, 2015
- David J. Hucknall, Vacuum Technology and Applications, Butterworth Heinema Ltd,1991
- John F. O'HanlonA User's Guide to Vacuum Technology, Jhon Willey and sons, 2006

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

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

Duration of Internal Tests : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
OPEN ELECTIVE B.E.-3/4- V Semester

TECHNICAL WRITING AND PROFESSIONAL PRESENTATIONS
Common to all branches

L: T: P (Hrs/Week): 3	SEE Marks: 60	Course Code: **OE010EH**
Credits: 3	CIE Marks: 40	Duration of SEE: Hours: 03

COURSE OBJECTIVES	COURSE OUTCOMES
1. understand the principles and mechanics of technical writing for students of engineering. 2. comprehend specific communications skills associated with reporting technical information and will write a series of papers ranging from process description and feasibility reports to research projects, project proposals, and statement of purpose, which are pre-requisites for start-up companies and getting into foreign universities as well. 3. make effective presentations as part of today's workplace demands.	**At the end of the course the student will be able to** 1. write effective reports 2. research and write project proposals and SoPs 3. make persuasive presentations

UNIT I
A. TECHNICAL REPORTS- INFORMAL
Informal report formats, project and research reports
B. TECHNICAL REPORTS-FORMAL
Formal report components, feasibility reports, evaluation reports, Analytical and informational reports, executive summaries.

UNIT II
TECHNICAL WRITING IN BUSINESS CORRESPONDENCE
Components of a letter, types of electronic communication, effective emails, instant and text messaging guidelines.
UNIT III
Technical Resume, Curriculum Vitae, Biodata, Cover letter, resume format.

UNIT IV

A. PROFESSIONAL PRESENTATIONS

Paper presentations, Poster presentations, PowerPoint presentations, video demos and tutorials

B. VIDEO DEMOS AND TUTORIALS

Storyboard writing, e-learning methods; video demos, training videos, webinars, conducting surveys, questionnaire, assessments, quiz, introduction to e-learning tools; Adobe Captivate, TechSmith Camtasia.

UNIT-V

HOW TO WRITE PROPOSALS AND STATEMENT OF PURPOSE

Types of proposals, persuasive elements, requests for proposals, stating your objective

METHODOLOGY: -	**ASSESSMENT: -**
Case Studies	Online assignments
Demonstration	Individual and Group Presentations
Expert lectures	Writing and Audio-visual lessons

Learning Resources: -

1. Effective Technical Communication, M Ashraf Rizvi, Tata McGraw-Hill Education, 2005
2. Raman, Meenakshi & Sangeeta Sharma. Technical Communication: Principles and Practice. Second Edition. New Delhi: Oxford University. Press, 2011.
3. Hacking Your Statement of Purpose: A Concise Guide to Writing Your SOP, Milena Young, 2014.
4. How to prepare a feasibility study: a step-by-step guide including 3 model studies. Front Cover. Robert E. Stevens, Philip K. Sherwood. Prentice-Hall, 1982.
5. Successful Presentations (with DVD): John Hughes & Andrew Mallett. Oxford university Press.

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

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

Duration of Internal Tests : 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

SCHEME OF INSTRUCTION AND EXAMINATION (R-17)

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

B.E (CSE) VI 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								
HS610EH	Finishing School-IV: Soft Skills	1	-	-	2	40	30	1
PC610CS	Internet of Things	3	-	-	3	60	40	3
PC620CS	Software Engineering	3	-	-	3	60	40	3
PC630CS	Artificial Intelligence	3	-	-	3	60	40	3
PC640CS	Automata, Languages and Computation	3	-	-	3	60	40	3
PE6X0CS	Professional Elective-I	3	-	-	3	60	40	3
OE6XXXX	Open Elective-V	3	-	-	3	60	40	3
MC610CS	Finishing School-IV: Technical Skills	1	-	-	2	40	30	1
PRACTICALS								
PC611CS	Internet of Things Lab	-	-	2	3	50	30	1
PC621CS	Software Engineering Lab	-	-	2	3	50	30	1
PC631CS	Artificial Intelligence and Machine Learning Lab	-	-	2	3	50	30	1
PW619CS	Theme Based Project	-	-	2	-	-	30	1
TOTAL		**20**	**-**	**8**	**-**	**590**	**420**	**24**
GRAND TOTAL		**28**			**-**	**1010**		
Left over hours are allocated for Co-Curricular Activities / Sports / Library / CC /RC / TC								

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

FINISHING SCHOOL-IV: SOFT SKILLS

SYLLABUS FOR B.E. VI-SEMESTER

L:T : P (Hrs/Week) : 1	SEE Marks : 40	Course Code: **HS610EH**
Credits: 1	CIE Marks : 30	Duration of SEE : 2 Hours

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

UNIT 1 QUANTITATIVE APTITUDE- ARITHMETIC ABILITY ADVANCED
8 hrs

- Time speed and distance
- Time and work
- Interest calculations

UNIT 2 REASONING ABILITY- LOGICAL REASONING
6hrs

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

- Dices

UNIT 3 REASONING ABILITY- NON VERBAL REASONING 4hrs

- Figure Series
- Figure Completion
- Mirror Images
- Water Images
- Paper Cutting
- Paper Folding
- Embedded Images

UNIT 4 REASONING ABILITY- CRITICAL REASONING PART 1 2hrs

- Statement Assumptions
- Statement Arguments

UNIT 5 REASONING ABILITY- CRITICAL REASONING PART 2 4hrs

- Course Of Action
- Cause & Effect
- Inferences

Learning Resources:

1. scoremore.talentsprint.com

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

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

Duration of Internal 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

INTERNET OF THINGS

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC610CS**
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 Explore IoT technologies, architectures and standards. 2 Develop IoT solutions for a given problem	1 Describe IoT architecture. 2 Develop applications using Raspberry PI. 3 Apply wireless protocols to develop an IoT solution 4 Integrate IoT application with Cloud. 5 Recognize IoT opportunities in the industry.

UNIT-I:

Internet of Things (IoT) : Definition and Characteristics of IoT, Physical Design of IoT, Logical Design of IoT, IoT Enabling Technologies, IoT Levels & Deployment, Sensors and Actuators, Envisioning the Internet of Things Era, Emergence of the IoT Platform as a Service (PaaS) ,Emerging IoT Flavors.

M2M and IoT Technology Fundamentals : Devices and Gateways, Local and Wide Area Networking, Data Management, Business Processes in IoT,Everything as a Service (XaaS), M2M and IoT.

UNIT-II:

Raspberry Pi: Board Components, Linux on Raspberry Pi, Raspberry Pi Interfaces, Programming Raspberry Pi with Python. Arduino Uno Platform, Interfacing with Uno.

IoT Ecosystem Using Wireless Technologies : Architecture for IoT Using Mobile Devices, Mobile Technologies, 5G, Software-Defned Networking, Ultra Wide Band Technology, Near Field Communication Technology, Low Power Wide Area Networking Technologies – Sigfox, Weightless, LoRa.

UNIT-III: Infrastructure and Service Discovery Protocols for the IoT Ecosystem : Layered Architecture for IoT, Protocol Architecture of IoT, IEEE 802.15.4, IPv6 over Low-Power Wireless Personal Area Networks (6LoWPAN), Bluetooth Low Energy, Long Term Evolution-Advanced, RFID, Z-Wave, Zigbee, Device or Service Discovery for IoT-Bluetooth Beacons, Wi-Fi aware, Open Hybrid.

UNIT-IV:

Integration Technologies and Tools for IoT Environments : Sensor and Actuator Networks, Sensor-to-Cloud Integration, IoT Device Integration Concepts, Standards, and Implementations – Service Oriented Device Architecture, Device Profile for Web Services, Open Service Gateway Initiative (OSGi), REST Paradigm, Message Queue Telemetry Transport (MQTT), Advanced Message Queuing Protocol (AMQP), Constrained Application Protocol (CoAP).

Next-Generation Clouds for IoT Applications and Analytics : Hybrid and Federated Clouds, Edge or Fog Clouds, Software-Defined Clouds, Cognitive Clouds, Amazon Web services for IoT.

UNIT-V:

Industry 4.0: Industrial Internet of Things (IIoT), Reference Architecture, Characteristics of Industry 4.0.

Case Studies: Introduction, Smart Cities, Smart Homes, Smart Lighting, Smart Transportation, Industrial Automation, Smart Healthcare, Agriculture.

Learning Resources:

1. Pethuru Raj and Anupama C. Raman , —The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press.
2. ArshdeepBahga, Vijay Madisetti, —Internet of Things: A Hands-on Approach‖, Universities Press, 2014.
3. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, —From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence‖, 1st Edition, 2014, Academic Press.
4. Jean-Philippe Vasseur, Adam Dunkles, —Interconnecting Smart Objects with IP‖, Morgan Kaufmann, 2010.
5. Peter Waher**, "**Learning Internet of Things‖, PACKT Publishing, 2015.
6. Bernd Scholz-Reiter, Florian Michahelles, —Architecting the Internet of Things‖, Springer
7. Daniel Minoli, —Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications‖, Wiley Publications.
8. https://www.postscapes.com/internet-of-things-protocols/
9. https://nptel.ac.in/courses/106105166/

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 : 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

SOFTWARE ENGINEERING

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC620CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Understand the concepts involved in the lifecycle of software development 2 learn the best practices to be employed for the design, development, testing and maintenance of a software project	1 Explain the software development lifecycle models for a software system development. 2 Build the prototype for software business case and estimate the cost for software project development. 3 Analyze the behavioral and architectural models using UML for the designed object oriented system. 4 Design the behavioral and architectural models using UML. 5 Identify verification and validation methods in a software engineering project and implement testing methods at various phases of SDLC

UNIT-I:

Introduction to Software Engineering: A generic view of Process: Software Engineering, Process Framework CMM Process Patterns, Process Assessment, Personal and Team Process Models.

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

An Agile view of Process: What is Agility, What is an Agile Process, Agile Process Models-Extreme programming, SCRUM, Kanban method, crystal, Dynamic Systems Development Method, Feature-Driven Development.

Development and Operations (DevOps): Principles, Life cycle, Work flow, Automation tools.

UNIT-II:

Planning and Managing the project: Tracking progress, Project Personnel, Effort Estimation, Risk Management, The Project Plan, Process Models and project Management.

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

Design concepts and principles :Principles, Abstraction, Refinement, Modularity, Cohesion and Coupling.

UNIT-III:

Object oriented Modeling & design using UML: Introduction to UML.

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

UNIT-IV:

Behavioural Modelling: Interactions, Interaction diagrams, Use Cases, Use Case Diagrams, Activity diagrams, Events and Signals, Processes and Threads, State Machines, State chart Diagrams.

Architectural Modelling: Artifacts, Deployment, Collaborations, Artifact diagrams, Deployment diagrams.

UNIT-V:

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

Testing Tactics: Software testing fundamentals, Black box and White box testing, Basis path testing, Control Structure, O-O testing methods, Class level testing methods, Inter class test case design, Testing for specialized environments, architectures and Applications testing patterns.

Product Metrics: Software quality, A frame work for Product metrics , Metric for the analysis model, Metrics for the Design Model , Metrics for Source code, Metrics for testing, Metrics for maintenance

Learning Resources:

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, 6th Edition (2005), Tata McGrawHill.
2. Grady Booch, James Rumbagu, Ivor Jacobson, The Unified Modeling Language-User guide, (Covering UML 2.0) ,2nd Edition (2007), Pearson Education, India.
3. Shari Lawrence Pfleeger, Software engineering Theory and Practices, 4th Edition (2011), Pearson Education, India.
4. Pankaj Jalote, An Integrated Approach to Software Engineering, 3rd Edition (2005), Narosa Publishing House.
5. http://nptel.ac.in/courses/106101061/
6. http://freevideolectures.com/Course/2318/Software-Engineering
7. http://www.ece.rutgers.edu/~marsic/books/SE/instructor/slides/
8. https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-355j-software-engineering-concepts-fall-2005/lecture-notes/

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 : 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
ARTIFICIAL INTELLIGENCE

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC630CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVE	**COURSE OUTCOMES** On completion of the course, students will be able to
Understand issues and techniques involved in the creation of intelligent systems.	1 Solve searching problems using A*. 2 Develop an algorithm for playing games. Represent the knowledge using propositional logic. 3 Create logical agents to do inference using first order logic. 4 Perform planning and solve problem with constraints. 5 Explain Bayesian Networks to do probabilistic reasoning

UNIT I:

Introduction: Introduction to AI

Intelligent Agents: Agents and Environments, Good Behavior: The Concept of Rationality, The Nature of Environments, The Structure of Agents.

Solving Problems By Search: Problem Solving Agents, Example problems, Searching for Solutions, Uninformed Search Strategies:Breadth-first search, Depth-first search, Depth limited search, Iterative deepening depth first search, Informed (Heuristic) Search Strategies: Greedy best-first search, A* Search: Minimizing the total estimated

solution cost, Heuristic Functions, Local Search Algorithms and Optimization Problems.

UNIT II:

Adversarial Search: Games, Optimal decisions in games, Alpha-Beta Pruning, Imperfect real time decisions.

Logical Agents – Knowledge-Based agents, The Wumpus World, Logic, Propositional Logic: A Very Simple Logic, Propositional theorem proving.

UNIT III:

First Order Logic: Syntax and Semantics of First-Order Logic, Using First-Order Logic, Knowledge Engineering in First-Order Logic.

Inference In First Order Logic: Propositional vs. First-Order Inference, Unification and Lifting, Forward Chaining, Backward Chaining, Resolution.

UNIT IV:

Constraint Satisfaction Problems: Defining Constraint Satisfaction Problems, Constraint Propagation, Backtracking Search for CSPs, Local Search for CSPs, The Structure of Problems.

Classical Planning: Definition of Classical Planning, Algorithms for Planning with State-Space Search, Planning Graphs, other Classical Planning Approaches, Analysis of Planning approaches.

UNIT V:

Uncertainty: Acting under Uncertainty, Basic Probability Notation, Inference Using Full Joint Distributions, Independence, Bayes‘ Rule and its Use.

Probabilistic Reasoning – Representing Knowledge in an Uncertain Domain, The Semantics of Bayesian Networks, Efficient Representation of Conditional Distribution, Exact Inference in Bayesian Networks, Approximate Inference in Bayesian Networks.

Learning Resources:

1. Stuart Russell, Peter Norvig, Artificial Intelligence – A Modern Approach, Third Edition (2019), Pearson
2. Nils J. Nilsson, Artificial Intelligence: A New Synthesis, (1998),Elsevier
3. Daniela Witten, Gareth James, Robert Tibshirani, and Trevor Hastie, An Introduction to Statistical Learning with Applications in R (Springer Texts in Statistics)
4. George F Luger , Artificial Intelligence, Structures and strategies for Complex Problem Solving, Sixth Edition,(2009), Pearson
5. Elaine Rich, Kevin Knight, Shivashankar B Nair, Artificial Intelligence, Third Edition(2009), Tata McGraw Hill
6. http://www.nptel.ac.in/courses/106105077
7. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-034-artificial-intelligence-spring-2005
8. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-034-artificial-intelligence-fall-2010/lecture-videos

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 : 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

AUTOMATA, LANGUAGES AND COMPUTATION

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PC640CS**
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 relationships among machines, languages and computational problems. 2 Design abstract models for formal languages. 3 Determine the decidability of computational problems.	1 Design Finite Automata for Regular Languages. 2 Apply formal mathematical methods to prove properties of languages, grammars and Automata. 3 Analyze the language and Design pushdown automata. 4 Design Turing machines for simple problems. 5 Describe and determine the Undecidability of a problem.

UNIT-I:

Automata: Introduction to Finite Automata, Central Concepts of Automata Theory.

Finite Automata: An Informal Picture of Finite Automata, Deterministic Finite Automata, Nondeterministic Finite Automata, An application, Finite Automata with Epsilon Transitions. Simulation of Finite Automata using JFLAP tool.

Regular Expressions and Languages: Regular Expressions, Finite Automata and Regular Expressions, Applications of Regular Expressions, Algebraic Laws for Regular Expressions.

UNIT – II:

Properties of Regular Languages: Proving Languages not to be Regular, Closure properties of Regular Languages, Decision Properties of Regular Languages, Equivalence and Minimization of Automata.

Context Free Grammars and Languages: Context-Free Grammars, Parse Trees, Applications of CFG's, Ambiguity in Grammars and Languages.

UNIT – III:

Pushdown Automata: Definition, Languages of a PDA, Equivalence of PDA's and CFG's, Deterministic Pushdown Automata. Simulation of Pushdown Automata using JFLAP tool.

Properties of Context Free Languages: Normal Forms for Context-Free Grammars, Pumping Lemma for CFL's, Closure properties, Decision Properties of CFL's.

UNIT – IV:

Linear Bounded Automata: Context sensitive grammars and languages, Linear bounded automata.

Introduction to Turing Machines: Problems That Computers cannot Solve, The Turing Machine, Programming Techniques for Turing Machines, Extensions to the Basic Turing Machine, Restricted Turing Machines, Turing Machines and Computers. Simulation of Turing Machine using JFLAP tool

UNIT – V:

Undecidability: A Language that is not Recursively Enumerable, An undecidable Problem that is RE, Undecidable problems about Turing Machines, Post's Correspondence Problem, Other Undecidable Problems.

Intractable Problems: The Classes P and NP, An NP-Complete Problem, A Restricted Satisfiability Problem

Learning Resources:

1. John. E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, Introduction to Automata Theory, Languages and Computation, 3rd edition (2009), Pearson Education.
2. John C.Martin, Introduction to Languages and the Theory of Computation, 3rd Edition (2003) Tata McGraw Hill.
3. Bernard M.Moret, The Theory of Computation (2002), Pearson Education.
4. Michael Sipser, Introduction to Theory of Computation, 3rd Edition (2012), Course Technology.

5. Mishra and Chandrashekaran, _Theory of computer science - Automata, Languages and Computation', 2nd Edition, PHI
6. ZviKohavi , Switching and finite Automata Theory,3rd Edition (1976), TMH.
7. http://www.nptelvideos.in/2012/11/theory-of-computation.html
8. http://nptel.ac.in/courses/106106049/
9. http://user.it.uu.se/~pierref/courses/FLAT/
10. http://www.eecs.wsu.edu/~ananth/CptS317/Lectures/
11. http://www.ics.uci.edu/~goodrich/teach/cs162/notes/

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 : 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

IMAGE PROCESSING

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **PE610CS**
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 fundamentals of image processing algorithms. 2 Apply image processing algorithms to solve real problems.	1 Distinguish sampling and quantization processes in obtaining digital images from continuously sensed data and describe the steps in image processing. 2 Apply Fourier transformation and other transformation techniques to enhance digital image. 3 Apply techniques in spatial domain to enhance and segment digital images. 4 Describe methods to encode raw image data into standard compressed image format. 5 Demonstrate most commonly applied image restoration and color models and their use in basic image processing.

UNIT-1:

Introduction to Digital Image Processing, Origins and Applications of Digital Image Processing. Fundamental Steps in Digital Image Processing, Components of Digital Image Processing System. Elements of Visual Perception, Light and the Electromagnetic Spectrum, Image Sensing and Acquisition, Image Sampling and Quantization.

UNIT-II: Filtering in the Frequency Domain:

Preliminary Concepts, Sampling and the Fourier Transform of Sampled Functions, The Discrete Fourier Transform (DFT) of One Variable, Extension to Function of Two Variables, Image Smoothing and Sharpening using Frequency Domain Filters.

UNIT-III:

Intensity Transformations and Spatial Filtering: Histogram Processing, Fundamental of Spatial Filtering, Smoothing and Sharpening Spatial Filters. **Image Segmentation:** Point, Line and Edge Detection, Thresholding, Region-Based Segmentation.

UNIT-IV:

Image Compression: Fidelity Criteria, Image Compression Models, Image Formats, Containers and Compression Standards, Compression Methods: Huffman Coding, Golomb Coding, Arithmetic Coding, LZW Coding, Run-Length Coding.

UNIT-V:

Restoration: Noise Models, Inverse filtering, Least squares filtering.
Color Image Processing :Color fundamentals, Color models, Pseudocolor Image Processing , Basics of full color image processing.

Learning Resources:

1. Gonzalez R.C., Woods R.E, Digital Image Processing, Third Edition (2007), Prentice Hall, USA.
2. Jayaraman S, Esakkirajan S, Veerakumar T, Digital image processing, 13th reprint (2014), McGraw Hill Education, New Delhi.
3. William K. Pratt, Digital Image Processing, 3rd Edition (2001) , John Wiley & Sons Inc, UK.
4. McAndrew, Introduction to Digital Image Processing, (2004), Cengage Learning.
5. Sonka, Hlavac, Boyle, Digital Image Processing and Computer Vision, (2008), Cengage Learning.
6. Rosenfeld A. Kak AC, Digital Picture Processing Vol.I & II Acad, Press, 2nd Edition.
7. https://ocw.mit.edu/resources/res-6-008-digital-signal-processing- spring-2011/introduction/.
8. http://freevideolectures.com/Course/2316/Digital-Image-Processing- IIT-Kharagpur

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 : 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

FINISHING SCHOOL-IV : TECHNICAL SKILLS

PEGA – TECH COURSE- I

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 1:0:0	SEE Marks : 40	Course Code : **MC610CS**
Credits : 1	CIE Marks : 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Discuss general DCM (Dynamic Case Management) and BPM industry definitions, technologies and methodologies and how the implementation strategies and artifacts are used within the Pega software development environment.	1 Describe how Agile and Scrum are the core methodologies utilized by Pega 7 with its DCO process for requirements elicitation. 2 Apply Pega flows and decision artifacts to implement application processes . 3 Implement web-based UI technologies through Pega UI rules . 4 Explain how Pega database(s) and tables support application persistency of class instance data.

UNIT-I: Prerequisite Technologies and DCO: Comparative Analysis Industry components/Pega Artifacts, DCO Concepts, Pega's Business Application Platform ,Prototyping an Application with Pega Express, Case Design using Designer Studio.

UNIT-II:

Pega Business Architect: Application Analysis, Application Design and Elaboration.

Pega System Architect: Application Design, Case Design, Data Model Design, Process Design, Decision Design, UI Design, Report Design, Data Management, Application Debugging.

Learning Resources:

1. https://pdn.com/

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

1	No. of Internal Tests	:	1	Max. Marks for each Internal Test	:	30

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

FINISHING SCHOOL-IV: TECHNICAL SKILLS

FUNDAMENTAL PROGRAMMING SKILLS

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 1:0:0	SEE Marks : 40	Course Code : **MC610CS**
Credits : 1	CIE Marks : 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Identify the appropriate data structure, and design technique to develop the solution for a given computational problem.	1 Choose the right data structure based on the requirements of the problem. 2 Approach the programming tasks using one of the design techniques and provide optimal solution.

UNIT – I:

Fundamentals of Programming: Fundamentals of programming through C – structure of a C program – compilation and linking processes – Constants, Variables – Tokens– Data Types – Format Specifiers, Input and Output statements – operators - Expression evaluation in C – Type qualifiers – Type Modifiers – Typedef Branching – if, if-else, else-if ladder, nested if, switch and goto statements - Loops – while, dowhile, for statements Practice: problems on data formats, operator‘s precedence and associativity, basic Conditional programs and Pattern display programs.

Arrays, Strings, Pointers: Arrays – Initialization – Declaration – One dimensional, Two dimensional and Multi-dimensional arrays. Strings – Operations on strings, string functions Pointers – Introduction to Program Memory, storage of data, Runtime memory allocation – Pointer Arithmetic - Pointer to an Array – pointer to linear data, runtime array, pointer to

2Darray. Practice: problems on RMO and CMO representations of an array, spiral display of a 2D array and matrix operations

UNIT – II:

Functions, Recursions and Storage Classes: Functions – Introduction to modular programming – Function Communication - Pass by value, Pass by reference – Function pointers – Recursions – Type casting – Storage classes Practice: programs on passing an array and catching by a pointer, function returning data, comparison between recursive and Iterative solutions.

Structures, Unions, Enumerations, Pre-processor Directives: Need for user-defined data type – structure definition – Structure declaration – Array within a Structure – Array of Structures – Nested Structures -Unions– Declaration of Union data type, Struct Vs Union - Enum– Pre- processor directives Practice: Structure padding, user-defined data storage and retrieval programs.

File Storage and OOP: Procedure vs. Object Oriented Programming – Data types – control structures – Operator Overloading – Inheritance – Polymorphism and Virtual Functions, Function templates and class templates – Name spaces – Casting – Exception Handling.

Learning Resources:

1. Balagurusamy E, Programming in ANSI C, 4th Edition(2008), TMG.
2. Gottfried, Programming with C, 3rd Edition(2010), TMH.

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

1	No. of Internal Tests	:	1	Max. Marks for each Internal Test	:	30

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

FINISHING SCHOOL-IV : TECHNICAL SKILLS

ADVANCED PROGRAMMING SKILLS-I

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 1:0:0	SEE Marks : 40	Course Code : **MC610CS**
Credits : 1	CIE Marks : 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Identify the appropriate data structure, and design technique to develop the solution for a given computational problem.	1 Choose the right data structure based on the requirements of the problem. 2 Design algorithm for a given problem by choosing appropriate design technique and provide optimal solution.

UNIT – I:

Greedy Methods: Introduction to Algorithms, Generalization of greedy approaches, Greedy Problems: selection sort, Coin change, Fractional knapsack, making change, Job scheduling, Activity Selection Problem

Introduction to Heaps, Min heap, Max heap, Priority Queue: Heap Sort, Huffman coding, Spanning Trees: Prim's and Kruskal's MSTs, Coding Problems applying Greedy Methods, Coding Problems on Huffman coding and Advanced Greedy Methods.

Dynamic Programming: Introduction to Dynamic programming strategies, Problem statement, Memoization, Optimal Substructure formation, P and NP Problem description, Dynamic Knapsack, Significance of the substructure, ways to decode, DP coin-change formation of sub structure. Classical Dynamic Programming

Divide and Conquer: Introduction to Divide and Conquer approach, Relating the D and C approach to problems, Fast matrix multiplication method, Quick and Merge Sort as D and C Approaches. Min function, Power function problem solving through D and C approach.

UNIT – II:

Backtracking Algorithms: Introduction to Brute force methods, The backtracking Algorithm, Iterative version, loop-free approach, Iteration Vs Recursion, Example problems.

Graph Algorithms: Introduction to graph theory, graph structure, graph terminology, graph traversal techniques, Connected Components, Colorings, Introduction to DAG, Graph Check, DFS Spanning Tree, Articulation Points and Bridges, Strongly Connected points

String Processing using DP: Basic string process mechanisms, AD HOC String process, KMP algorithm, String Matrix match, Alignments, Classical Vs Non Classical Strings with DP.

Classical Dynamic Programming Solutions: Backtrack with bitmask and pruning, Negative parameter values with Offset, Classical Vs Non Classical Examples.

Advanced Tree Algorithms:

Generic Trees, Threaded Binary tree Traversals, Expression Trees, XOR Trees, Splay Trees, B-Tree, Suffix Tree, Tree operations

Problem Solving Techniques & Object Oriented Programming:

Orientation to Object oriented programming, OOP features, Introduction to STLs

DBMS:

Introduction to DBMS, SQL Queries, ER And Relational Models, Data Definition And Querying, Transactions And Concurrency, Normalization, case studies.

Learning Resources:

1. Forouzan B.A & Richard F. Gilberg, A Structured Programming Approach using C, 3rdEdition(2013), Cengage Learning.

2. Gottfried, Programming with C, 3rd Edition(2010), TMH R G Dromey, How to Solve it by Computer, 1st Edition(2006), Pearson Education.
3. Ellis Horowitz, Sartaj Sahani, Sanguthevar Rajasekaran,- Fundamentals of computer Algorithms‖, Second edition (2008),Universities Press.
4. Thomas H. Cormen, Leiserson C.E, Rivest.R.L , Stein.C, Introduction to Algorithm, 2nd edition (2001), MIT press, USA.
5. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical programming-in-c-january-iap-2010/syllabus/

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

1	No. of Internal Tests	:	1	Max. Marks for each Internal Test	:	30

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

INTERNET OF THINGS LAB

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code : **PC611CS**
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 Develop programs to interface sensors & actuators with Raspberry PI and Arduino Uno. 2 Develop applications for smart home.	1 Build programs to interface sensors with Raspberry PI. 2 Develop applications to monitor devices using wireless technologies 3 Build programs on Arduino Uno 4 Develop applications to publish data on to the cloud 5 Implement programs to demonstrate RTOS concepts

Programming Exercise:

1. Experiments using Arduino Uno Board.
2. Programming Raspberry PI to read data from onboard sensors.
3. Interfacing ultrasonic, IR sensors to Raspberry PI
4. Interfacing Soil Moisture sensor for Agriculture based Application
5. Developing Control applications to interface actuators.
6. Demonstrate communication protocol Bluetooth
7. Application of Wi-Fi in IoT systems.
8. Demonstrate communication protocol LoRa.
9. Develop an application using MQTT Protocol.

10. Publishing data on to Cloud
11. Demonstration of following RTOS concepts
    a. Timing
    b. Multi-Tasking
    c. Semaphores
    d. Round-Robin Task Scheduling
    e. Preemptive Priority Based Task Scheduling
12. Develop a project that addresses a specific domain.

Learning Resources:

1. ArshdeepBahga, Vijay Madisetti, —Internet of Things: A Hands-on Approach‖, Universities Press, 2014.
2. https://www.raspberrypi.org/.
3. https://www.arduino.cc/.
4. http://electronicsforu.com/resources/embedded-systems-overview/.

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			

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

SOFTWARE ENGINEERING LAB

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code : **PC621CS**
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 software engineering principles for analyzing, visualizing, specifying, constructing for software intensive system. 2 Document the artifacts of software system.	1 Identity the functional and non functional requirements and estimate effort /cost for the given system. 2 Design the Data/Work/Control flow in the modules of the intended system. 3 Construct the Structural, Behavioural, Interaction & State aspects for the intended system. 4 Develop the artifacts of the intended system through forward and reverse engineering. 5 Build test cases and evaluate the software project quality.

Programming Exercise:
Select one large information system/Approach and device the following using CASE TOOL.

1. Systems software Requirements and related analysis documents as per the guidance in ANSI/IEEE Std 830-1984.
2. Design documents representing the complete design of the software system using Data flow diagram.
3. Functional Decomposition and structure.
4. Behavioral Modeling- use case diagram demonstration using UML.

5. Behavioral Modeling- Interaction diagram demonstration using UML.
6. Behavioral Modeling- State machine diagram demonstration using UML.
7. Structural Modeling- Class diagram demonstration using UML.
8. Familiarization of Forward and reverse engineering the class diagram using tools.
9. Architectural Modeling-component and deployment diagram demonstration using UML.
10. Simple exercises on effort, cost and resource estimation.
11. Familiarization of Software Configuration Management tool.
12. Test case Generation, Verification.
13. Demonstration on functional testing using RFT.
14. Evaluation of project quality using RQM.
15. Build a design model for a given application.

Learning Resources:

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, 6th Edition, (2005) Tata McGrawHill.
2. Grady Booch, James Rumbagu, Ivor Jacobson, The Unified Modeling Language-User guide , 2nd Edition, (2007), Pearson Education, India.
3. James Rumbagu, Ivor Jacobson, Grady Booch, The Unified Modeling Language-Reference Manual, (2004), 2ndEdition, Pearson Education, India.
4. http://www.nyu.edu/classes/jcf/g22.2440-001_sp09/handouts/UMLBasics.pdf
5. https://courses.cs.washington.edu/courses/cse403/11sp/lectures/lecture08-uml1.pdf
6. http://www.conceptdraw.com/examples/online-uml-class-diagram-of-material-management-system

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			

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING LAB

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code : **PC631CS**
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Understand issues and techniques involved in the creation of intelligent systems	1 Design python programs for various learning algorithms. 2 Identify and apply machine learning algorithms to solve real world problems. 3 Implement uninformed and informed search to solve the search problems. 4 Implement the Game playing algorithm such as Minimax and AlphaBeta pruning 5 Build Neural network to solve classification problems.

Programming Exercise:

- Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a CSV file.
- Write a program to implement k-Nearest Neighbor algorithm to classify the iris dataset. Print bothcorrect and wrong predictions Python MLlibrary classes can be used for this problem.
- Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.

- Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can addPython ML library classes/API in the program.
- Write a machine learning program for the perception model and calculate the Error for the back propagation.
- Implement an AI program on Uninformed search algorithm Breadth first search, Depth First search ,IDFS.
- Implement an AI program for Water jug problem.
- Implement an AI program on 8-Puzzle problem using A*
- Implement an AI program on 8-queens problem.
- Implement an AI program for Alpha beta pruning.
- Implement an AI Program for the TIC TACTOE using minimax method.
- Implement an AI program for missionaries and cannibals Problem.

Learning Resources:

1. Tom Mitchell, —Machine Learning||, McGraw-Hill Science, First edition.
2. Stuart Russell, Peter Norvig, Artificial Intelligence – A Modern Approach, Third Edition (2015),
3. Daniela Witten, Gareth James, Robert Tibshirani, and Trevor Hastie, An Introduction to Statistical Learning with Applications in R (Springer Texts in Statistics).
4. George F Luger , Artificial Intelligence, Structures and strategies for Complex Problem Solving, Sixth Edition,(2009), Pearson
5. Elaine Rich, Kevin Knight, Shivashankar B Nair, Artificial Intelligence, Third Edition(2009), Tata McGraw Hill
6. http://www.nptel.ac.in/courses/106105077
7. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-034-artificial-intelligence-spring-2005
8. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-034-artificial-intelligence-fall-2010/lecture-videos

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			

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

THEME BASED PROJECT

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : -	Course Code :**PW619CS**
Credits : 1	CIE Marks : 30	Duration of SEE : -

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 Develop an application in the relevant area of Computer Science 2 Learn contemporary technologies.	1 Review the literature survey to identify the problem. 2 Design a model to address the proposed problem. 3 Develop and test the solution. 4 Demonstrate the work done in the project through presentation and documentation. 5 Adapt to contemporary technologies.

The students are required to carry out a theme based project by selecting any one of themes like Smart Home, Smart Parking, Smart Transport, Smart Waste Management, Smart Healthcare, Smart Agriculture, Smart Lighting, Smart Logistics and Smart Security in the area of Internet of Things or themes in any other area relevant to Computer Science.

Students are required to submit a report on the theme based project at the end of the semester.

With effect from the Academic Year 2019-20

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

Dept	Title	Code	credits
Civil	Project Management	OE610CE	3
ECE	Basics of Communication Systems	OE610EC	3
ECE	Internet of Things and Applications	OE620EC	3
ECE	Introduction to Mobile Communications	OE630EC	3
EEE	Basics of Power Systems	OE610EE	3
Mech.	Introduction to Automobile Engineering	OE610ME	3
Mech.	Additive Manufacturing and its applications	OE620ME	3
Physics	Fundamentals of Nano Materials and Their Applications	OE610PH	3
H&SS	English for Competitive Examinations	OE610EH	3
H&SS	Technical Writing and Professional Presentations	OE010EH	3

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

PROJECT MANAGEMENT (Open Elective-V)

SYLLABUS FOR B.E. VI SEMESTER

L : T : P (Hrs./week): 3:0:0	SEE Marks:60	Course Code: **OE610CE**
Credits : 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	**COURSE OUTCOMES**
The objectives of the course are to	Upon the completion of the course, students are expected to
1. Learn the concept of project management along with functions and objectives. 2. Understand the various techniques used for project planning such as bar charts, CPM, PERT and crashing of networks. 3. Acquire knowledge on various types of contracts, tenders.	1. Understand the objectives, functions and principles of management in projects. 2. Practice the network techniques like CPM and PERT for better planning and scheduling of engineering works. 3. Analyse the importance of cost and time in network analysis and planning the work accordingly. 4. Knowledge on Contracts, Tenders, and Work orders related to the projects. 5. Interpret the concept of Linear Programming and solve problems by Graphical and Simplex methods.

UNIT-I

Significance of Project Management: Objectives and functions of project management, management team, principles of organization and types of organisation.

UNIT-II

Project Planning: Project Planning, bar charts, network techniques in project management - CPM Expected likely, pessimistic and optimistic time, normal distribution curve and network problems of PERT

UNIT-III

Time Cost Analysis: Cost time analysis in network planning, updating

UNIT-IV

Contracts: Introduction, types of contracts and their advantages and disadvantages, conditions of contracts, Introduction to Indian contract act.

Tender: Tender form, Tender Documents, Tender Notice, Work Order.

UNIT-V

Linear programming and optimization Techniques: Introduction to optimization – Linear programming, Importance of optimization, Simple problems on formulation of LP, Graphical method, Simplex method.

Learning Resources:

1. Srinath L.S., PERT and CPM: Principles and Application, East-West Press, 2001.
2. Peret, F, Construction Project Management an Integrated approach, Taylor and Francis, Taylor and Francis Group, London & New York, 2009
3. Punmia B.C., and Khandelwal, PERT and CPM, Laxmi Publications, 2006.
4. http://nptel.ac.in/courses/

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

BASICS OF COMMUNICATION SYSTEMS (OPEN ELECTIVE-V)

SYLLABUS FOR B.E. VI - SEMESTER (for other branches)

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **OE610EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

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

UNIT - I :

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

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

UNIT - II :

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

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

UNIT - III :

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

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

UNIT - IV :

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

UNIT - V :

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

Learning Resources:

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

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

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

Duration of Internal Tests: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTERNET OF THINGS AND APPLICATIONS

(OPEN ELECTIVE-V)

SYLLABUS FOR B.E. VI - SEMESTER

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **OE620EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. The purpose of this course is to impart knowledge on IoT Architecture, practical constrains. 2. To study various protocols And to study their implementations	On completion of the course, students will be able to 1. Understand the Architectural Overview of IoT 2. Enumerate the need and the challenges in Real World Design Constraints 3. Compare various IoT Protocols. 4. Build basic IoT applications using Raspberry Pi. 5. Understand IoT usage in various applications.

UNIT - I : OVERVIEW

Introduction to IoT – Improving Quality of life.

IoT-An Architectural Overview, M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide area networking, Data management, Business processes in IoT.

UNIT - II : Real-World Design Constraints

Real-World Design Constraints- Introduction, Technical Design constraints-hardware is popular again, Data representation and visualization, Interaction and remote control. Power Management in IoT device, Power conditioning using energy harvesting.

UNIT - III : IOT PROTOCOLS

Introduction to MQTT, Quality of services in MQTT,standards and security in MQTT.

Introduction and implementation of AMQP, Implementation of CoAP and MDNS.

UNIT - IV : Device for IoT

Choice of Microcontroller, Introduction to Raspberry Pi ,Features of Pi, Programming platform, Phython programming for Pi. Building basic IoT Applications using Raspberry Pi.

UNIT - V : IoT case studies

Smart Cities and Smart Homes, Connected Vehicles, Agriculture, Healthcare, Activity Monitoring.

Learning Resources:

1. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, StamatisKarnouskos, David Boyle, —From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence‖, 1 st Edition, Academic Press, 2014.
2. Peter Waher, -Learning Internet of Things‖, PACKT publishing, BIRMINGHAM – MUMBAI
3. Bernd Scholz-Reiter, Florian Michahelles, —Architecting the Internet of Things‖, ISBN 978-3-642-19156-5 e-ISBN 978-3-642-19157-2, Springer
4. Daniel Minoli, —Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications‖, ISBN: 978-1-118- 47347-4, Willy Publications
5. https://nptel.ac.in/courses/106105166/5
6. https://nptel.ac.in/courses/108108098/4

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

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

Duration of Internal Tests: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INTRODUCTION TO MOBILE COMMUNICATIONS

(OPEN ELECTIVE-V)

SYLLABUS FOR B.E. VI - SEMESTER

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **OE630EC**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To understand the technology trends changing from generation to generation. 2. To have an insight into the various propagation models and the effects of fading. 3. To understand the multiple access techniques and Mobile communication system specifications.	On completion of the course, students will be able to 1. Analyze various methodologies to improve the cellular capacity. 2. Identify various Propagation effects. 3. Identify the effects of fading and multi path propagation. 4. Categorize various multiple access techniques for Mobile Communications. 5. Analyze the specifications of GSM based Mobile Communication Systems.

UNIT - I:

Introduction to Wireless Communication Systems: Evolution of Mobile Radio Communications, Examples of Wireless Communications Systems, Trends in Cellular Radio and Personal Communication Systems.

The Cellular Concept – System Design Fundamentals: Introduction, Frequency Reuse, Channel Assignment Strategies, Handoff Strategies, Interference and System Capacity, Improving Coverage and Capacity in Cellular Systems.

UNIT - II:

Mobile Radio Propagation - Large Scale Path Loss: Introduction to Radio wave Propagation, Free Space Propagation Model, Reflection, Ground Reflection (Two-Ray) Model, Diffraction, Scattering.

UNIT - III:

Mobile Radio Propagation - Small Scale Fading and Multipath: Small Scale Multipath Propagation, Small – Scale Multipath Measurements, Parameters of Mobile Multipath Channels, Types of Small-Scale Fading, Rayleigh and Ricean Distributions.

UNIT -IV:

Multiple Access Techniques for Wireless Communications: Introduction, Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), Space Division Multiple Access (SDMA).

UNIT -V:

Wireless Systems and Standards: Global System for Mobile (GSM) – Services and features, System architecture, GSM Radio subsystem, channel types, Frame structure for GSM.

Learning Resources:

1. Theodore S. Rappaport, Wireless Communications Principles and Practices, 2nd edition, Pearson Education.
2. David Tse, Pramodh Viswanath, Fundamentals of Wireless Communication, 2005, Cambridge University Press.
3. Name of the course: Introduction to Wireless and Cellular Communications
   Course url: https://swayam.gov.in/nd1_noc19_ee48/preview

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

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

Duration of Internal Tests: 90 Minutes

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Electrical & Electronics Engineering

Basics of Power Systems

(Open Elective – V)

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P(Hrs./week):3:0:0	SEE Marks: 60	Course Code: **OE610EE**
Credits :3	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1. To comprehend the various ways of power generation.	1. Identify the various and major ways of generation of power in India.
2. To determine the per unit cost of a power generating station.	2. Estimate the energy generated by hydel generating station.
	3. Calculate the capacitance value for p.f. improvement.
	4. Assess the tariffs of domestic and commercial loads

UNIT – I: **Thermal Power Station:**

Line diagram of Thermal Power Station (TPS) showing paths of coal, steam, water, air, ash and flue gasses. Brief description of TPS components-Economizers, Boilers, Super heaters, Turbines, Condensers, Chimney and cooling towers, choice of site for steam power station.

UNIT – II :**Hydro Power Stations:**

Power Generation Principles, Choice of site, layout and various parts of generating stations, Estimation of power in Hydel, flow duration curve, hydrograph, mass curve etc., Types of Hydel stations.

UNIT – III: Nuclear Power Stations:

Nuclear Fission and Chain reaction, Principle of operation of Nuclear reactor, Reactor Components- Moderators, Control rods, Reflectors and Coolants

UNIT – IV: Economics of Power Generation:

Load Curve, Load duration curve, load demand and diversity factors, base load and peak load operation, types of costs and depreciation fund calculations, Tariffs-Desirable characteristics of a tariff, types of tariff

UNIT – V: Power Factor:

Disadvantages of low p.f, Causes of low P.F, Power factor improvement, Methods of power factor improvement, Numerical problems.

Learning Resources:

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

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

1	No. of Internal Tests:	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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mechanical Engineering

INTRODUCTION TO AUTOMOBILE ENGINEERING

(OPEN ELECTIVE-V)

SYLLABUS FOR B.E.VI-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **OE610ME**
Credits :03	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
1 familiarize the student with the different types of automobiles and engine components.	1 identify types of Automobiles and engine components.
2 impart adequate knowledge in fuel supply, cooling, lubrication systems of IC engines.	2 describe the engine fuel system in petrol and Diesel engines, cooling, lubrication systems.
3 understand the steering geometry, steering mechanism and types of suspension systems.	3 describe the steering mechanism, suspension systems
4 gain the knowledge about working of clutch, gear mechanism, brakes	4 analyse the working principle and operation of clutch, gear mechanism and brakes.
5 make the student conversant with types of wheels, tyres and pollution control techniques.	5 know the pollutants from automobile and pollution control techniques and identify the types of wheels, tyres.

UNIT-I

Introduction: Types of automobiles: Hybrid Vehicles, Electrical, gas and Fuel cell vehicles. Chassis and body, Lay out of transmission system, Engine components: cylinder block, cylinder head, crankcase, crank shaft and cam shaft. Types of IC Engines: SI and CI engines, two stroke and four stroke engines.

UNIT-II

Fuel system: Fuel supply system for SI engines and CI engines. Simple carburettor, Introduction to Multipoint fuel injection system (**MPFI**) of petrol engines and Introduction to **CRDI** system for diesel engines.

Cooling system: air cooling, water cooling: Thermo syphon, pump circulation system.

Lubrication system: Petroil System, splash system, pressure lubrication: Wet sump and Dry Sump.

Ignition system: Battery Ignition System, Magneto Ignition System and Electronic Ignition System.

UNIT-III

Suspension system: Rigid axle, Independent suspension system:Double wish bone type, Macpherson strut system, Air suspension system.

Steering system: front axle, wheel alignment, steering geometry: camber, caster, toe-in, toe-out, steering linkage for vehicle with rigid axle front suspension, steering linkage for vehicle with independent front suspension, Ackermann steering mechanism.

UNIT –IV

Power Train: Single plate clutch, Multi plate clutch. Manual Gear Box: sliding mesh gear box, constant mesh gear box, synchromesh gear box and Automatic Gear Box. Working principle of Differential.

Brakes: Types: Drum and Disc brakes, Mechanical and Hydraulic Brakes, **ABS** system.

UNIT –V

Wheels and Tyres: Types of Wheels: wire wheels, disc wheels, alloy wheels. Types of tyres: Tube type, tubeless type. **SRS** Airbag system.

Automobile Emissions and control: Automobile pollutants and sources of pollution. Pollution Control Techniques: Catalytic Converters, EGR and PCV. Bharath emission Norms.

Learning Resources:

1. Crouse & Anglin, —Automobile Engineering‖, 10th Edition, Tata McGraw Hill Publishing Co. Ltd., New Delhi,. 2007.
2. Kirpal Singh, —Automobile Engineering‖, Vol.I& II, 13th Edition, Standard Publishers, New Delhi 2013.
3. R.B Gupta, —Automobile Engineering‖ 7th Edition, Satya Prakashan, New Delhi, 2015.
4. Joseph Heitner, —Automotive Mechanics‖, 2nd Edition, Affiliated East West Pvt. Ltd., 2013.
5. C.P. Nakra, —Basic Automobile Engineering‖, 7th Edition, Dhanpat Rai Publishing C (P) Ltd., 2016.

With effect from the Academic Year 2019-20

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

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Mechanical Engineering

ADDITIVE MANUFACTURING AND ITS APPLICATIONS

(OPEN ELECTIVE-V)

SYLLABUS FOR B.E.VI-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **OE620ME**
Credits :03	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** On completion of the course, students will be able to
The objective of the course is to understand the fundamentals of various additive manufacturing technologies and their applications in Engineering Industry.	1 understand the fundamentals of prototyping. 2 study the principle, process, advantages and limitations of liquid based AM systems. 3 study the principle, process, advantages and limitations of solid based AM systems. 4 study the principle, process, advantages and limitations of powder based AM systems. 5 study the applications of AMT in various engineering industries.

UNIT-I

Introduction, Prototyping fundamentals, Historical development, Fundamentals of rapid prototyping, Advantages of Rapid prototyping, Commonly used terms, Rapid prototyping process chain, 3D modelling, Data Conversion, and transmission, Checking and preparing, Building, Post processing, AM data formats, Classification of AM process

UNIT-II

Liquid based AM systems: Stereolithography Apparatus(SLA): Models and specifications, Process, Working principle, photopolymers, Photopolymerisation, Layering technology, laser and laser scanning, Applications, Advantages and disadvantages, Case studies

Solid ground curing(SGC): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies

UNIT-III

Solid based AM systems: Laminated object manufacturing(LOM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies. Fused Deposition Modeling (FDM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies.

UNIT-IV

Powder based AM systems: Selective laser sintering(SLS): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies.

Three dimensional printing (3DP): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies.

UNIT-V

Applications of AM systems: Applications in aerospace industry, automotive industry, jewellery industry, coin industry, GIS Application, arts and architecture.

RP medical and bio engineering Application: planning and simulation of complex surgery, customized implant and prosthesis , design and production of medical devices, forensic science and anthropology, visualization of bio-molecules.

Learning Resources:

1. Chua C.K., Leong K.F. abd LIM C.S., —World Rapid prototyping : Principles and Applications‖, 2nd Editon, Scientific Publications, 2004
2. D.T.Pham and S.S.Dimov, —Rapid Manufacturing‖, Springer, 2001.
3. AmithabaGhose, —Rapid prototyping‖, Eastern Law House, 1997.
4. Paul F.Jacobs, —Stereolithography and other RP & M Technologies‖, ASME Press, 1996.
5. Paul F.Jacobs, —Rapid Prototyping & Manufacturing‖, ASME Press, 1996.

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

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

Ibrahimbagh, Hyderabad-500 031

DEPARTMENT OF PHYSICS

(OPEN ELECTIVE-V)

FUNDAMENTALS OF NANO MATERIALS AND THEIR APPLICATIONS

SYLLABUS FOR B.E.VI-SEMESTER

L:T:P(Hrs/week):3:0:0	SEE Marks:60	Course Code: **OE610PH**
Credits :03	CIE Marks:40	Duration of SEE:03Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Students will be able to learn	At the end of the course students will be
1. Learn bulk, thin and nano structures 2. Acquire knowledge on properties of nano materials 3. Appreciate fabrication techniques of nano materials 4. Learn nanomaterial characterization techniques. 5. Appreciate application of nano materials	1. Distinguish bulk, thin and nano materials from the point of view of size effects 2. List various properties of nano materials 3. Narrate various nanonmaterial preparation techniques 4. Describe necessary characterization techniques of nano materials 5. Write various applications of CNTS and nano structures.

UNIT-I: INTRODUCTION TO NANOSCIENCE

Distinction between bulk, thin and nano materials-surface to volume ratio, change of electronic structure, density of states of thin and nano materials, quantum confinement-quantum size effect-Reduction of dimensionality, Quantum wells (two dimensional),Quantum wires (one dimensional), Quantum dots (zero dimensional).

UNIT-II: PROPERTIES OF NANO MATERIALS

Material behavior at reduced dimensions, Electrical properties: conductivity, surface scattering, ballistic transport Magnetic properties: Soft magnetic Nano-crystalline alloy, Permanent magnetic Nano-crystalline materials, Giant Magnetic Resonance, chemical properties, optical properties and thermal properties.

UNIT-III: NANOMATERIALS PREPARATION TECHNIQUES

Bottom-up and Top-down approaches. Preparation techniques Bottom-up methods: Physical Vapor Deposition, Laser Ablation, Chemical Vapor

Deposition, Molecular Beam Epitaxy, Solgel method ,Self assembly, top-down methods: ball milling, Nano-lithography, Spark plasma sintering.

UNIT-IV: NANO 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-V: CARBON NANO MATERIALS AND APPLICATIONS

Graphene, Elementary ideas on Carbon nanotubes, CNTs, types of CNTs-single wall (SWCNT) and multiwall carbon nanotubes (MWCNT), properties and characteristics of SWCNTS and MWCNTS. Applications of nano materials in Cosmetic sector, Food, Agricultural, engineering, automotive Industry, environment, medical applications, Textiles, Paints, Energy, space Applications, nanosensors and nanocatalysts.

Learning Resources:

1. B.S. Murthy, P. Shankar, Baldev Raj, B.B. Rath and James Munday, Text Book of Nano Science and Nano Technology –University Press (India) 2013
2. K.K. Chattopadhyay and A.N. Benerjee, Introduction to Nanoscience and Nanotechnology , PHI, 2019

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

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

(OPEN ELECTIVE) - B.E 3/4 -VI SEMESTER

Course Name: ENGLISH FOR COMPETITIVE EXAMINATIONS

(Common to all branches)

L: T: P (Hrs/Week): 3	SEE Marks: 60	Course Code: **OE610EH**
Credits: 3	CIE Marks: 40	Duration of SEE: Hours: 03

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	**On completion of the course, students will be able to:**
1. To familiarise the students to various types of competitive examinations.	1. The student will be able to solve various types of questions in competitive English examinations effectively.
2. To practice questions and prepare for GATE, GRE, CAT, TOEFL.	3. Provide logical conclusions for the questions on aptitude and reasoning within the stipulated time.

GATE :

- Concentrating on English grammar
- Recognizing suitable option in sentence completion
- Solving verbal analogies
- Categorizing word groups
- Ignoring distractions in critical reasoning questions
- Providing reasoning in verbal deduction

GRE :

VERBAL REASONING:

- Analysing and drawing add value to incomplete data; identify the perception of the author
- Identifying vital points and differentiating between relevant and irrelevant points
- Understanding and summarising the structure of a text
- Understanding the given words, sentences and entire texts; ability to focus on the meaning of the entire sentence
- Understanding relationships among words and concepts

ANALYTICAL WRITING:

- Articulating complex ideas effectively and with clarity
- Supporting ideas with relevant reasons and examples

- Examining claims and accompanying evidence
- Sustaining a well-focused, coherent discussion

CAT :

VERBAL ABILITY AND READING COMPREHENSION:

- Reading comprehension (antonyms/synonyms)
- Sentence correction
- Fill in the blanks & cloze passage
- Jumbled sentences
- Jumbled paragraph (word meaning based questions)
- Analogies
- Para odd one out
- Summary (facts, assumptions, judgements
- Verbal reasoning (paragraph formation)

TOEFL:

- Basic understanding, speed and accuracy, learning from reading, pronoun reference, author's point of view.
- Good delivery including clarity of speech, fluidity, natural pacing and correct intonation patterns.
- Correct use of language showing a good grasp of grammar, vocabulary and speech structures.
- Topic development in which you are able to show a well-structured. organized response that effectively connects ideas with enough support for each point you are making.
- Writing strategy and format execution skills.

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

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

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

With effect from the Academic Year 2019-20

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

OPEN ELECTIVE B.E.-3/4- V Semester

Technical Writing and Professional Presentations

Common to all branches

L: T: P (Hrs/Week): 3	SEE Marks: 60	Course Code: **OE010EH**
Credits: 3	CIE Marks: 40	Duration of SEE: Hours: 03

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	**At the end of the course the student will be able to**
1. understand the principles and mechanics of technical writing for students of engineering. 2. comprehend specific communications skills associated with reporting technical information and will write a series of papers ranging from process description and feasibility reports to research projects, project proposals, and statement of purpose, which are pre-requisites for start-up companies and getting into foreign universities as well. 3. make effective presentations as part of today's workplace demands.	1. write effective reports 2. research and write project proposals and SoPs 3. make persuasive presentations

UNIT I

A. TECHNICAL REPORTS- INFORMAL

Informal report formats, project and research reports

B. TECHNICAL REPORTS-FORMAL

Formal report components, feasibility reports, evaluation reports, Analytical and informational reports, executive summaries.

UNIT II

TECHNICAL WRITING IN BUSINESS CORRESPONDENCE

Components of a letter, types of electronic communication, effective emails, instant and text messaging guidelines.

UNIT III

Technical Resume, Curriculum Vitae, Biodata, Cover letter, resume format.

UNIT IV

A. PROFESSIONAL PRESENTATIONS

Paper presentations, Poster presentations, PowerPoint presentations, video demos and tutorials

B. VIDEO DEMOS AND TUTORIALS

Storyboard writing, e-learning methods; video demos, training videos, webinars, conducting surveys, questionnaire, assessments, quiz, introduction to e-learning tools; Adobe Captivate, TechSmith Camtasia.

UNIT-V

HOW TO WRITE PROPOSALS AND STATEMENT OF PURPOSE

Types of proposals, persuasive elements, requests for proposals, stating your objective

METHODOLOGY: -	**ASSESSMENT: -**
Case Studies	Online assignments
Demonstration	Individual and Group Presentations
Expert lectures	Writing and Audio-visual lessons

Learning Resources: -

1. Effective Technical Communication, M Ashraf Rizvi, Tata McGraw-Hill Education, 2005
2. Raman, Meenakshi & Sangeeta Sharma. Technical Communication: Principles and Practice. Second Edition. New Delhi: Oxford University. Press, 2011.
3. Hacking Your Statement of Purpose: A Concise Guide to Writing Your SOP, Milena Young, 2014.
4. How to prepare a feasibility study: a step-by-step guide including 3 model studies. Front Cover. Robert E. Stevens, Philip K. Sherwood. Prentice-Hall, 1982.
5. Successful Presentations (with DVD): John Hughes & Andrew Mallett. Oxford university Press.

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

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

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

VASAVI COLLEGE OF ENGINEERING(AUTONOMOUS), HYDERABAD-500031

ACTIVITY CALENDAR FOR THE ACADEMIC YEAR 2019-2020

S.No.	Date	Day	Details of Activity / Public Holiday
	JULY,2019		
1	15-07-2019	MON	Course Registration by Students--> BE III, V & VII SEMESTER
2	16-07-2019	TUE	Course Registration by Students--> BE III, V & VII SEMESTER
3	17-07-2019	WED	Course Registration by Students--> BE III, V & VII SEMESTER
4	18-07-2019	THU	Course Registration by Students--> BE III, V & VII SEMESTER
5	19-07-2019	FRI	Course Registration by Students--> BE III, V & VII SEMESTER
6	20-07-2019	SAT	Course Registration by Students--> BE III, V & VII SEMESTER
7	21-07-2019	SUN	PUBLIC HOLIDAY
8	22-07-2019	MON	Commencement of instruction : BE III, V & VII SEMESTER
9	23-07-2019	TUE	--
10	24-07-2019	WED	--
11	25-07-2019	THU	--
12	26-07-2019	FRI	--
13	27-07-2019	SAT	--
14	28-07-2019	SUN	PUBLIC HOLIDAY
15	29-07-2019	MON	BONALU- HOLIDAY
16	30-07-2019	TUE	--
17	31-07-2019	WED	--
	AUGUST,2019		
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
42	25-08-2019	SUN	Orientation and Briefing session for Registration of subjects(ME/M.TECH III SEM) PUBLIC HOLIDAY
43	26-08-2019	MON	Commencement of Instruction (ME/M.TECH- III SEM)

44	27-08-2019	TUE	--
45	28-08-2019	WED	--
46	29-08-2019	THU	--
47	30-08-2019	FRI	--
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' Daycelebrations
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 & VIISEMESTER
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	--

101	23-10-2019	WED	--
102	24-10-2019	THU	--
103	25-10-2019	FRI	--
104	26-10-2019	SAT	--
105	27-10-2019	SUN	PUBLIC HOLIDAY- DEEPAVALI
106	28-10-2019	MON	--
107	29-10-2019	TUE	--
108	30-10-2019	WED	--
109	31-10-2019	THU	--

NOVEMBER, 2019

110	01-11-2019	FRI	--
111	02-11-2019	SAT	--
112	03-11-2019	SUN	PUBLIC HOLIDAY
113	04-11-2019	MON	--
114	05-11-2019	TUE	--
115	06-11-2019	WED	--
116	07-11-2019	THU	--
117	08-11-2019	FRI	--
118	09-11-2019	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
119	10-11-2019	SUN	EID MILAD-UN-NABI- PUBLIC HOLIDAY
120	11-11-2019	MON	--
121	12-11-2019	TUE	KARTHIKA PURNIMA/ GURUNANAK'S BIRTH DAY
122	13-11-2019	WED	-- II- INTERNAL TEST-BE III, V & VII SEMESTER
123	14-11-2019	THU	-- II- INTERNAL TEST-BE III, V & VII SEMESTER
124	15-11-2019	FRI	II- INTERNAL TEST-BE III, V & VII SEMESTER
125	16-11-2019	SAT	II- INTERNAL TEST-BE III, V & VII SEMESTER--**> LAST DATE OF INSTRUCTION**
126	17-11-2019	SUN	PUBLIC HOLIDAY
127	18-11-2019	MON	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
128	19-11-2019	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER)
129	20-11-2019	WED	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE III, V & VII SEMESTER
130	21-11-2019	THU	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

DECEMBER,2019

140	01-12-2019	SUN	PUBLIC HOLIDAY
141	02-12-2019	MON	**COMMENCEMENT OF THEORY EXAMS(BE III, V & VII SEMESTER)**
142	03-12-2019	TUE	--
143	04-12-2019	WED	--
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	--
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	**SECONDCLASSTEST: ME/M.TECH- IIISEM-->LASTDATEOF 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	--

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	--

FEBRUARY, 2020

202	01-02-2020	SAT	--
203	02-02-2020	SUN	PUBLIC HOLIDAY
204	03-02-2020	MON	COMMENCEMENT OF MAKE-UP EXAMS: ME/M.TECH- III SEM 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 & VIIISEMESTER
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

MARCH,2020

231	01-03-2020	SUN	PUBLIC HOLIDAY
232	02-03-2020	MON	--
233	03-03-2020	TUE	--
234	04-03-2020	WED	--
235	05-03-2020	THU	--
236	06-03-2020	FRI	--
237	07-03-2020	SAT	Parent-Teacher Meeting- BE IV, VI & VIII SEMESTER
238	08-03-2020	SUN	PUBLIC HOLIDAY
239	09-03-2020	MON	--
240	10-03-2020	TUE	--
241	11-03-2020	WED	--

242	12-03-2020	THU	--
243	13-03-2020	FRI	--
244	14-03-2020	SAT	PUBLIC HOLIDAY(2ND SATURDAY)
245	15-03-2020	SUN	PUBLIC HOLIDAY
246	16-03-2020	MON	--
247	17-03-2020	TUE	--
248	18-03-2020	WED	--
249	19-03-2020	THU	--
250	20-03-2020	FRI	--
251	21-03-2020	SAT	--
252	22-03-2020	SUN	PUBLIC HOLIDAY
253	23-03-2020	MON	--
254	24-03-2020	TUE	--
255	25-03-2020	WED	--
256	26-03-2020	THU	--
257	27-03-2020	FRI	--
258	28-03-2020	SAT	--
259	29-03-2020	SUN	PUBLIC HOLIDAY
260	30-03-2020	MON	--
261	31-03-2020	TUE	--

APRIL,2020

262	01-04-2020	WED	-- **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	PREPARATIONHOLIDAYS&PRACTICALEXAMS(BE IV,VI&VIII SEMESTER)
282	21-04-2020	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
283	22-04-2020	WED	PREPARATIONHOLIDAYS&PRACTICALEXAMS(BE IV,VI&VIIISEMESTER)
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	PREPARATIONHOLIDAYS&PRACTICALEXAMS(BE IV,VI&VIII SEMESTER)
289	28-04-2020	TUE	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
290	29-04-2020	WED	PREPARATIONHOLIDAYS&PRACTICALEXAMS(BE IV,VI&VIIISEMESTER)
291	30-04-2020	THU	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)

MAY,2020

292	01-05-2020	FRI	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER)
293	02-05-2020	SAT	PREPARATION HOLIDAYS & PRACTICAL EXAMS(BE IV, VI & VIII SEMESTER) GUEST LECTURE : BE II SEM
294	03-05-2020	SUN	PUBLIC HOLIDAY
295	04-05-2020	MON	**COMMENCEMENT OFTHEORY EXAMS(BE IV,VI& VIII SEMESTER) / SUMMER VACATION STARTS FOR STAFF**
296	05-05-2020	TUE	--
297	06-05-2020	WED	--
298	07-05-2020	THU	--
299	08-05-2020	FRI	**LAST DATE FOR SUBMISSION OF DRAFT DISSERTATAION : ME/M.TECH IV 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	Conductof External Viva-voce : ME/M.TECH- IV SEM
345	23-06-2020	TUE	--

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