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 2020-21
(For the batch admitted in 2018-19)
(R-18)

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

Institute Vision

Striving for a symbiosis of technological excellence and human values

Institute Mission

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

Department Vision

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

Department Mission

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

B.E (CSE) Program Educational Objectives (PEO's)	
Graduates should be able to utilize the knowledge gained from their academic program to:	
PEO I	Solve problems in a modern technological society as valuable and productive engineers.
PEO II	Function and communicate effectively, both individually and within multidisciplinary teams.
PEO III	Be sensitive to the consequences of their work, both ethically and professionally, for productive professional careers.
PEO IV	Continue the process of life-long learning.

B.E. (CSE) PROGRAM OUTCOMES (PO's)	
Engineering Graduates will be able to:	
PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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-18) B.E 2018-19 ADMITTED BATCH
B.E. – COMPUTER SCIENCE & ENGINEERING : V SEMESTER (2020 - 2021)

Course Code	Name of the Course	Scheme of Instruction			Duration in Hrs	Scheme of Examination		Credits
		Hours per Week				Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U18HS500EH	Skill Development-III (Soft Skills)	1	-	-	2	40	30	1
U18HS020EH	Human Values and Professional Ethics-II	1	-	-	2	40	30	1
U18HS030EH	Economics and Finance for Engineers	2	-		3	60	40	2
U18PC510CS	Database Management Systems	3	-	-	3	60	40	3
U18PC520CS	Computer Networks	3	-	-	3	60	40	3
U18PC530CS	Web Programming and Services	3	-	-	3	60	40	3
U18PE500CS	Skill Development-III (Technical Skills)	1	-	-	2	40	30	1
U18OE5XXXX	Open Elective-IV	3	-	-	3	60	40	3
PRACTICALS								
U18PC511CS	Database Management Systems Lab	-	-	2	3	50	30	1
U18PC521CS	Computer Networks Lab	-	-	2	3	50	30	1
U18PC531CS	Web Programming and Services Lab	-	-	2	3	50	30	1
U18PW519CS	Mini Project	-	-	2	-	-	30	1
Library / Sports / Mentor Interaction		-	-					
TOTAL		17	-	8	-	570	410	21
GRAND TOTAL		25			-	980		-
Student should acquire one online course certification equivalent to two credits during III Sem to VII Sem								
Left over hours are allocated for Extra Curricular Activities, Co-Curricular Activities, Sports / Library / Mentor Interaction / CC /RC / TC								

With effect from the Academic Year 2020-21

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

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Skill Development-III (Soft Skills)
SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs/Week): 1:1:0	SEE Marks: 40	Course Code: **U18HS500EH**
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.	1 Solve questions on the above mentioned areas using short cuts and smart methods.
2 Students will be introduced to higher order thinking skills and problem solving on the following areas - Arithmetic ability, Numerical ability and General reasoning.	2 Understand the fundamentals concept of Aptitude skills.
	3 Perform calculations with speed and accuracy.
3 Students will be trained to work systematically with speed and accuracy while problem solving.	

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

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: **U18HS020EH**
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.	1. Gain a world view of the self, the society and the profession.
2. Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations.	2. Start exploring themselves in relation to others and their work –constantly evolving into better human beings and professionals.
3. Understand professionalism in harmony with self and society.	3. Inculcate Human values into their profession.
4. Develop ethical human conduct and professional competence.	4. Obtain a holistic vision about value-based education and professional ethics.
5. Enrich their interactions with the world around, both professional and personal.	

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-2GENDER 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 (Telengana 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, RukminideviArundale, Annie Beasant, Sarojini Naidu, MedhaPadhkar, Kalpana Chawla, etc.}

MODE Of DELIVERY

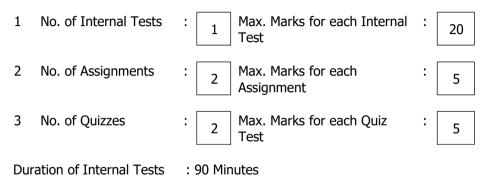|	
• **Questionnaires** • **Quizzes** • **Case-studies** • **Observations and practice** • **Home and classroom assignments**	• **Discussions** • **Skits** • **Short Movies/documentaries** • **Team tasks and individual tasks** • **Research based tasks** • **Viva**

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

Duration of Internal Tests   : 90 Minutes

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

Department Of 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: **U18HS030EH**
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 NarainAgarwal.
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

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:**U18PC510CS**
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/

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

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: **U18PC520CS**
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:
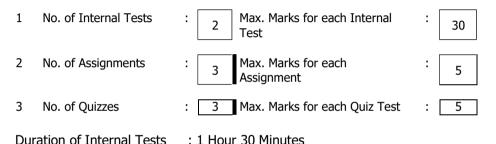**Application Layer:** Domain Name System -DNS Name Space, Domain Resource Records, Name Servers, FTP,TELNET
Network Security: Cryptography, Symmetric Key Algorithms: DES, AES, Cipher modes.
Public Key Algorithms: RSA. Digital Signatures, Management of Public Keys.

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

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

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: **U18PC530CS**
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.	1	Apply HTML, CSS & JavaScript to design web pages.
2	Develop and publish web services.	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/

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

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: **U18PE500CS**
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

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

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: **U18PC511CS**
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			

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 : **U18PC521CS**
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.	1	Implement functionalities of TCP/IP protocol stack
2	Develop client server application using socket API.	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.

<u>Learning Resources:</u>

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			

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 : **U18PC531CS**
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			

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

Department of Computer Science & Engineering
MINI PROJECT

SYLLABUS FOR B.E. V-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : --	Course Code : **U18PW519CS**
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 2020-21

OPEN ELECTIVES OFFERED BY CSE DEPARTMENTS IN

B.E. V SEMESTER (2020-21)

Dept	Title (Open Electives-III)	Code	Credits
Civil	Spatial Information Technology	U18OE510CE	3
CSE	Fundamentals of Object Oriented Programming	U18OE510CS	3
	Web Design	U18OE520CS	3
ECE	Mathematical Programming for Engineers	OE510EC	3
	Sensors for Engineering Applications	U18OE510EC	3
EEE	Solar Power and applications	U18OE510EE	3
Mech	Introduction to Robotics	U18OE510ME	3
	Introduction to Automobile Engineering	U18OE520ME	3
IT	Introduction to Database Management Systems	U18OE510IT	3
	Introduction to Statistical Programming	U18OE520IT	3
H&SS	Technical Writing and Professional Presentations	U19OE010EH	3

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

SPATIAL INFORMATION TECHNOLOGY
(Open Elective-III)
SYLLABUS FOR B.E. V SEMESTER

L : T : P (Hrs./week):3:0: 0	SEE Marks:60	Course Code: U18OE510CE
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
To provide fundamental knowledge on geo spatial technology such as Remote sensing GPS and GIS.	1. Select the type of remote sensing technique/data, identify and analyze the earth surface features from the satellite images. 2. Identify GPS components, interpret the navigational message and signals received by the GPS satellites, Identify the error sources and apply corrections for accurate positioning. 3. Analyse the basic components of GIS, process spatial and attribute data, identify and rectify mapping inaccuracies and prepare thematic maps

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. Applications of Remote sensing in various fields.

Unit III:
Global positioning Systems (GPS)
Overview of GNSS and Introduction to GPS, GLONASS, GALILEO, COMPASS, IRNSS systems , Applications of GPS.
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.

Unit V
Basic Concepts: Introduction to GIS, History of GIS, Early development in GIS, Areas of GIS application, Components of GIS, Overview of GIS Software packages, Current issues and Trends in GIS.
Variables-Point, line, polygon, Geographic coordinate system, Map
projections, Map Analysis.
GIS Data: Data types – spatial, non-spatial (attribute data) – data
structure, data format – point line vector – Raster – Polygon
Data Input : Keyboard entry, Manual Digitizing, Scanner, Remotely sensed data, Existing Digital data Cartographic database, Digital elevation data
Data Editing: Detection and correction of errors, data reduction, edge matching

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
7. Thanappan Subash., Geographical Information System, Lambert Academic Publishing, 2011.
8. Paul Longley., Geographic Information systems and Science, John Wiley & Sons, 2005
9. John E. Harmon & Steven J. Anderson., The design and implementation of Geographic Information Systems, John Wiley & Sons, 2003
10. ArcGIS 10.1 Manuals, 2013.
11. Kang Tsung Chang., Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi, 2008.
12. Burrough, P.A., Principles of GIS for Land Resource Assessment, Oxford Publications, 2005.
13. C.P.Lo & Albert K. W.Yeung, Concepts and Techniques of Geographic Information Systems, Prentice Hall India Pvt.Ltd, 2002.

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

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

Duration of Internal Tests : 90 Minutes

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

Department of Computer Science & Engineering
FUNDAMENTALS OF OBJECT ORIENTED PROGRAMMING
(OPEN ELECTIVE-III)

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

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code :**U18OE510CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1 Apply object oriented 2 principles for developing an application using Java constructs. Design GUI using existing Java classes and interfaces.	1. Adopt the fundamentals of Object oriented system development for developing a application. 2. Apply basic features of OOP to design an application. 3. Employ runtime error handling, concurrent programming practices to develop a parallel processing application. 4. Perform string handling, read and write operations using console and files IO streams. 5. Design GUI for a java application using AWT classes.

UNIT-I: Object Oriented System Development: Understanding Object Oriented Development, Understanding Object Concepts, Benefits of Object Oriented Development.
Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control Statements.

UNIT-II: Building blocks of OOP: Classes and Methods, Constructor, Parameterized constructor, Garbage Collection, this, static, final keywords, Inheritance, types of inheritance, Method Overriding, Abstract class, Nested class, Interface, Package.

UNIT-III: Exception Handling: try, catch, throw, throws, finally, creating user defined exceptions

Multithreaded Programming: Types of Thread creation, multiple threads, isalive, join, thread priority, Thread Synchronization, Inter process communication.

UNIT-IV:String Handling: String constructors, operations, character extraction, comparison, search, modification. StringBuffer, methods, StringBuilder, StringTokenizer

Util: Date, Calendar, Random, Timer, Observable

IO: Files and Directories, I/O Classes and Interfaces, Byte Streams classes and Character Stream classes

UNIT-V: Applet: Applet Class, Applet architecture

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

GUI Development: AWT: Classes, Working with Graphics, Frames, Menu, Layout Managers**.**

Learning Resources:

1. Herbert Schildt, The Complete Reference Java, 7th Edition, Tata McGraw Hill 2005.
2. P. Radha Krishna, Object Oriented Programming through Java, Universities Press, 2007.
3. Sachin Malhotra, Saurabh Choudhary, Programming in Java, 2nd Edition, Oxford Press, 2014.
4. https://docs.oracle.com/javase/tutorial/java

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   : 1 Hour 30 Minutes

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

Department of Computer Science & Engineering
WEB DESIGN (OPEN ELECTIVE-III)

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

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code :**U18OE520CS**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES	
	On completion of the course, students will be able to	
To Develop web application using HTML, CSS, JavaScript and PHP.	1	Design static web pages.
	2	Apply styles to the web pages.
	3	Create dynamic web pages using JavaScript.
	4	
	5	Design DTD and schema for a given XML file.
		Develop server side components using PHP.

UNIT-I: Web Basics and overview: Introduction to Internet, World Wide Web, Web Browsers, Web Servers, URL, MIME, HTTP, Web Programmers Tool Box, Introduction to HTML Purpose of HTML and XHTML, Text Formatting, Hypertext Links, Images, Lists, Tables, Forms and Frames.

UNIT-II: Cascading Style Sheets- Levels of Stylesheet, Style Specification Formats, Selector Formats, Property Value Forms, Font Properties, List Properties, Alignment of Text, Box Model, Background Images, Borders, div and span tags, Conflict Resolution.

UNIT-III: JavaScript - Object Orientation and JavaScript, Primitives, Operations, Expressions, Control Statements, Object Creation, Arrays, Functions- Introduction, Program Modules in JavaScript, Programmer-Defined Functions, Function Definitions, Random-Number Generation, Scope Rules, JavaScript Global Functions, Recursion, Constructors, Regular Expressions, DOM Model, Events, Event Handling in JavaScript, JavaScript objects.

UNIT-IV: Introduction to XML, Syntax of XML, XML Document Structure, Document type Definition, Namespaces and Schemas.
Client-Server Architecture, Multi-tier Architecture, Web server.

UNIT-V: PHP- Overview of PHP, General Syntactic Characteristics, Primitives, Operations, and Expressions, Output, Control Statements, Arrays, Functions, Pattern Matching, Form Handling, Cookies and Session Tracking.

<u>Learning Resources:</u>
1. Robert W. Sebesta, "Programming the World Wide Web", Pearson Education.(3rd)
2. Uttam K.Roy, "Web Technologies", Oxford publishers.
3. http://www.w3schools.com
4. https://www.php.net/manual/en/tutorial.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   : 1 Hour 30 Minutes

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

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
Mathematical Programming for Engineers
(OPEN ELECTIVE - II)
SYLLABUS FOR B.E. V - SEMESTER (for other branches)

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 4th order Runge-kutta Method, ODE Solvers in MATLAB,Solving First –order equations using ODE23 and ODE45.

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

Learning Resources:

1. Getting started with MATLAB "A quick introduction for scientist and engineers by 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

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

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SENSORS FOR ENGINEERING APPLICATIONS (OPEN ELECTIVE)
SYLLABUS FOR B.E. V - SEMESTER (for other branches)

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **U18OE510EC**
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

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

SYLLABUS FOR B.E. V-SEMESTER
INTRODUCTION TO ROBOTICS (Open Elective-III)

Instruction : 3 Hours	SEE Marks : 60	Course Code : **U18OE510ME**
Credits 3	CIE Marks: 40	Duration of SEE : 3 Hours

Course objectives	Course Out comes
The objectives of this course are to: Identify robots and its peripherals for satisfactory operation and control of robots for industrial and non-industrial applications.	On completion of the course, the student will be able to 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. classifythe 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. MikellP. Groover, Mitchell Weiss, Roger N Nagel and Nicholas G Odrey, "Industrial Robotics Technology, Programming and Applications", TataMcGraw-Hill Publishing Company Limited , 2008.
2. Deb.S.R and Sankha Deb, "Robotics Technology and Flexible Automation", Tata McGraw HillPublishing Company Limited, 2010.
3. KlafterR.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",TataMcGraw-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**

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

DEPARTMENT OF MECHANICAL ENGINEERING
SYLLABUS FOR B.E. V-SEMESTER

INTRODUCTION TO AUTOMOBILE ENGINEERING (OE-III)

Instruction : 3Hours	SEE Marks : 60	Course Code : U18OE520ME
Credits 3	CIE Marks : 40	Duration of SEE : 3 Hours

Course objectives	Course Outcomes
The objectives of this course are to:	On completion of the course, the student 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.

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

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

Duration of Internal Test: 1 Hour 30 Minutes

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

DEPARTMENT OF INFORMATION TECHNOLOGY

INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS
(Open Elective-III)
SYLLABUS FOR B.E. V SEMESTER
(Common for CIVIL, ECE, EEE & MECH)

L : T : P (Hrs./week): 3:0:0	SEE Marks :60	Course Code :**U18OE510IT**
Credits 3	CIE Marks: 40	Duration of SEE :3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
Apply the concepts of database management systems and design relational databases.	1. Understand functional components of the DBMS and develop ER model for a given problem and map ER it to Relational model 2. Understand Relational model and basic relational algebra operations. 3. Devise queries using SQL. 4. Design a normalized database schema using different normal forms. 5. Understand transaction processing and concurrency control techniques.

UNIT – I
Introduction: Database System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Database Architecture, Database Users and Administrators.
DatabaseDesign and the E-R Model: Overview of the Design Process, The E-R Model, Constraints, E-R Diagrams

UNIT – II
Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Fundamental Relational-Algebra Operations.

UNIT – III
Structured Query Language: Introduction, Data Definition, Basic Structure of SQL Queries, Modification of the Database, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Join Expressions, Views.

UNIT – IV
Relational Database Design: Features of Good Relational Design, Normalization-Decomposition Using Functional Dependencies, Functional-Dependency Theory.

UNIT – V
Transactions: Transaction Concepts, Transaction State, Concurrent Executions, Serializability
Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocols.

Learning Resources :
1. Abraham Silberschatz, Henry F Korth, S. Sudarshan, Database System Concepts, 6th Edition, McGraw-Hill International Edition, 2011.
2. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, Third Edition, McGraw-Hill International Edition, 2003.
3. Elmasri, Navathe, Somayajulu and Gupta, Fundamentals of Database System, 6th Edition, Pearson Education, 2011.
4. Patric O'Neil, Elizabeth O'Neil, Database-principles, programming, and performance,Morgan Kaufmann Publishers, 2001.
5. Peter Rob, Carlos coronel, Database Systems, (2007), Thomoson.
6. https://nptel.ac.in/courses/106105175/

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

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

INTRODUCTION TO STATISTICAL PROGRAMMING
(Open Elective-III)
SYLLABUS OF B.E V- SEMESTER
(Common for CIVIL, ECE, EEE & MECH)

L:T:P(Hrs./week): 3:0:0	SEE Marks :60	Course Code : **U18OE520IT**
Credits :3	CIE Marks: 40	Duration of SEE :3 Hours

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
The course will enable the students to apply the statistical programming concepts and techniques using Python libraries in the analysis of Statistical data.	1. Understands the basics of statistical concepts and various data types in Numpy, Pandas. 2. Cleans and Analyzes the data with descriptive statistics and EDA. 3. Visualizes the data with matplotlib, seaborn graphic libraries. 4. Analyzes data with various statistical inference techniques using Hypothesis testing. 5. Understands and applies various data distributions, sampling and simulation of random variables. 6. Applies various statistical models like linear regression, ANOVA to the data.

Unit I: Introduction to Statistical computing and Python libraries
Intro to statistics: Samples and Population,Descriptive statistics; intro to Computational statistics, Data analysis, knowledge discovery in Data, Various data types.
Intro to statistical computing software: Python libraries & R.

Unit II: Data Collection, Cleaning and Exploratory Data Analysis using Pandas.

Data types in Numpy, Pandas: list, vector, matrix, array, tensor, DataFrame. Operations on Data Types.
Data import using Pandas, Data cleaning, imputation, EDA case studies using Pandas.

Unit III: Data Visualization with matplotlib and Seaborn.

Intro to matplotlib and Seaborn graphic libraries, basic visualizations using matplotlib, Advanced visualizations with Seaborn, Data correlation chart. Case studies on visualizations.

Unit IV: Data distributions, Statistical Inference using Hypothesis testing.

Understanding various data distributions: Bernoulli, Binomial, Exponential, Poisson & Gaussian.
Intro to Hypothesis testing: p-value, critical value, interpretation of test results.
Types of Hypothesis testing using Scipy.stats: Normality tests, Correlation tests, Comparing samples.

Unit V: Simulations and Statistical models

Random variables, sampling and simulation of data distributions.
Statistical models: Linear algebra, Optimizations, Linear regression, Intro to Statistical or Machine learning.

Learning Resources:

1. https://machinelearningmastery.com/statistics_for_machine_learning/
2. https://scipy-lectures.org/packages/statistics/index.html
3. Udemy: Python for Statistical Analysis
4. courseera: Statistics with Python specialization
5. https://numpy.org/
6. https://pandas.pydata.org/
7. https://matplotlib.org/
8. https://seaborn.pydata.org/
9. https://www.statsmodels.org/stable/index.html
10. https://scikit-learn.org/stable/
11. A first Course in Statistical Programming with R, W. John Braun, Duncan J. Murdoch, Cambridge University Press, 2007.
12. https://cran.r-project.org/manuals.htm

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. V Semester

TECHNICAL WRITING AND PROFESSIONAL PRESENTATIONS
(Common to all branches)

L:T: P (Hrs/Week):3	SEE Marks:60	Course Code: U19OE010EH
Credits: 3	CIE Marks:40	Duration of SEE:Hours:03

COURSE OBJECTIVES	COURSE OUTCOMES
This course introduces the principles and mechanics of technical writing for students of engineering. Students will learn: 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. How to 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 marks for CIE:
Internal Tests (2); Quiz Tests (3) + Assignments (3)

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)
SCHEME OF INSTRUCTION AND EXAMINATION (R-18) B.E 2018-19 ADMITTED BATCH
B.E. – COMPUTER SCIENCE & ENGINEERING : VI SEMESTER (2020 - 2021)

S. No	Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
			Hours per Week			Duration in Hrs	Maximum Marks		
			L	T	P/D		SEE	CIE	
THEORY									
1	U18HS600EH	Skill Development-IV (Soft Skills)	1	-	-	2	40	30	1
2	U18PC610CS	Internet of Things	3	-	-	3	60	40	3
3	U18PC620CS	Software Engineering	3	-	-	3	60	40	3
4	U18PC630CS	Artificial Intelligence	3	-	-	3	60	40	3
5	U18PC640CS	Automata, Languages and Computation	3	-	-	3	60	40	3
6	U18PE650CS	Skill Development-IV (Technical Skills)	1	-	-	2	40	30	1
7	U18PE6XXCS	Professional Elective-I	3	-	-	3	60	40	3
8	U18OE6XXXX	Open Elective-V	3	-	-	3	60	40	3
PRACTICALS									
9	U18PC611CS	Internet of Things Lab	-	-	2	3	50	30	1
10	U18PC621CS	Software Engineering Lab	-	-	2	3	50	30	1
11	U18PC631CS	Artificial Intelligence Lab	-	-	2	3	50	30	1
12	U18PW619CS	Theme Based Projects	-	-	2	-	-	30	1
		Library / Sports / Proctorial Interaction	-	-	-	-	-	-	-
TOTAL			20	8	-	-	590	420	
GRAND TOTAL			28			-	1010		24
Student should acquire one online course certification equivalent to two credits during III Sem to VII Sem									
Left over hours are allocated for Co-Curricular Activities, Sports / Library / Mentor Interaction / CC /RC / TC									

		B. E. 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	18PE610CS	Neural Networks	U18PE 620CS	Advanced Computer Architecture	U18PE 30CS	Software Project Management	U18PE640CS	Image Processing

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

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Skill Development-IV (Soft Skills)

SYLLABUS FOR B.E. VI-SEMESTER

L:T : P (Hrs/Week) : 1	SEE Marks : 40	Course Code: **U18HS600EH**
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.	1 Solve questions on the above mentioned areas using short cuts and smart methods.
2 Students will be introduced to higher order thinking skills and problem solving on the following areas - Arithmetic ability, Numerical ability and General reasoning.	2 Understand the fundamentals concept of Aptitude skills.
3 Students will be trained to work systematically with speed and accuracy while problem solving.	3 Perform calculations with speed and accuracy.

UNIT 1 QUANTITATIVE APTITUDE- 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

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 : **U18PC610CS**
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.	1	Describe IoT architecture.
2	Develop IoT solutions for a given problem	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, Academic Press, 2014.
4. Srinivasa K.G., Siddesh G.M., Hanumantha Raju R., "Internet of Things", 1st Edition, Cengage, 2018.
5. "IoT Fundamentals: Networking Technologies, Protocols and Use Cases for the Internet of Things", Pearson, 2017.
6. Jean-Philippe Vasseur, Adam Dunkles, "Interconnecting Smart Objects with IP", Morgan Kaufmann, 2010.
7. Peter Waher, "Learning Internet of Things", PACKT Publishing, 2015.
8. Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet of Things", Springer
9. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", Wiley Publications.
10. https://www.postscapes.com/internet-of-things-protocols/
11. 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

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:**18PC620CS**
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
The Nature of Software: Defining Software, Software Application Domain, Legacy Software, The changing Nature of the software : WebApps, Mobile Applications, Cloud Computing, Product line software

Software Engineering : The Process Frame work, Umbrella Activities, Process Adaption, Software development myths

The Software Process: Defining framework activities, Identifying a task set, Process patterns, Process Assessment and improvement

Process Models: Prescriptive models, Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, The Unified Process, personal software process, Team Software Process.

UNIT-II:

Agile Development: What is Agility, Agility and the cost of change, What is an Agile Process, Agile Process Extreme programming, SCRUM, Dynamic Systems Development Method, Agile Unified Process.

Requirements Engineering: Establishing the ground work, Eliciting requirements, Developing use cases, Building the Analysis model, Negotiating Requirements, Requirement Monitoring, Validating Requirements.

Design concepts: The Design Process, Design Concepts, The Design Model.

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.

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-IV:

Testing Strategies: A Strategic approach to software testing ,Strategic issues, Test strategies for Object Oriented Software, Test strategies for WebApps, Test strategies for MobileApps, Validation testing, System testing, the art of debugging.

Testing Conventional Applications: 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.

UNIT-V:

Security Engineering: Analyzing Security Requirements, Security and Privacy in an Online World, Security Engineering Analysis, Security Assurance, Security Risk Analysis, Verification of Trustworthy Systems

Software Configuration Management : Software Configuration Management, The SCM Repository, The SCM process, Configuration Management for Web and Mobile Apps

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, 8th 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

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: **U18PC630CS**
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

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 : **U18PC640CS**
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.	1 Design Finite Automata for Regular Languages.
2 Design abstract models for formal languages.	2 Apply formal mathematical methods to prove properties of languages, grammars and Automata.
3 Determine the decidability of computational problems.	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

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

Department of Computer Science & Engineering

IMAGE PROCESSING
(Professional Elective-I)

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: **U18PE640CS**
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

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

Department of Computer Science & Engineering
Skill Development-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: **U18PE600CS**
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

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:

9. Gonzalez R.C., Woods R.E, Digital Image Processing, Third Edition (2007), Prentice Hall, USA.
10. Jayaraman S, Esakkirajan S, Veerakumar T, Digital image processing, 13th reprint (2014), McGraw Hill Education, New Delhi.
11. William K. Pratt, Digital Image Processing, 3rd Edition (2001) , John Wiley & Sons Inc, UK.
12. McAndrew, Introduction to Digital Image Processing, (2004), Cengage Learning.
13. Sonka, Hlavac, Boyle, Digital Image Processing and Computer Vision, (2008), Cengage Learning.
14. Rosenfeld A. Kak AC, Digital Picture Processing Vol.I & II Acad, Press, 2nd Edition.
15. https://ocw.mit.edu/resources/res-6-008-digital-signal-processing- spring-2011/introduction/.
16. 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

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

Department of Computer Science & Engineering

Skill Development-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: **U18PE600CS**
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

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

Department of Computer Science & Engineering

Skill Development-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: **U18PE600CS**
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   : | 30 |
                                          Internal Test

Duration of Internal Tests   : 1 Hour 30 Minutes

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: **U18PC611CS**
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.

<u>Learning Resources:</u>

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			

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: **18PC621CS**
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.	1	Identity the functional and non functional requirements and estimate effort /cost for the given system.
2	Document the artifacts of software 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.

<u>Learning Resources:</u>

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			

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

Department of Computer Science & Engineering
ARTIFICIAL INTELLIGENCE LAB

SYLLABUS FOR B.E. VI-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U18PC631CS**
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 Implement python programs for various List operations 2 Implement uninformed search to solve the search problems 3 Implement informed search to solve the search problems 4 Implement the Game playing algorithm such as Minimax and AlphaBeta pruning 5 Design a solution for the Constraint satisfaction problem

Programming Exercise:

- Implement a python program to implement List operations (Nested List, Length, Concatenation, Membership, Iteration, Indexing and Slicing),
- List methods (Add, Append, Extend Delete, Find,Search).
- Implement an Uninformed search algorithm : Breadth first search
- Implement an Uninformed search algorithm : 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 CrypthArithmatic problem
- Implement an AI program to Map Coloring using 'n' Specified colors

- Implement minmax algorithm
- Implement an AI program for Alpha beta pruning.
- Implement an AI Program for the TIC TAC TOE game using minimax method.
- Implement an AI program for missionaries and cannibals Problem.

Learning Resources:

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

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:**U18PW619CS**
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	1	Review the literature survey to identify the problem.
2	Learn contemporary technologies.	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.

OPEN ELECTIVES OFFERED BY CSE DEPARTMENTS IN

B.E. VI SEMESTER (2019-20)

Dept	Title Open Electives -IV	Code	Credits
Civil	Project Management	U18OE610CE	3
CSE	Introduction to Databases	U18OE610CS	3
	Introduction to Operating Systems	U18OE620CS	3
ECE	Internet of Things and Applications	U18OE610EC	3
	Introduction to Mobile communications	U18OE620EC	3
EEE	Electrical Installation and Safety	U18OE610EE	3
Mech	Additive manufacturing and its applications	U18OE610ME	3
	Industrial Administration and Financial Management	U18OE620ME	3
IT	Introduction to Web Application Development	U18OE610IT	3
	Introduction to Machine Learning	U18OE620IT	3
H&SS	Technical Writing and Professional Presentations	U19OE010EH	3
	English for Competitive Examinations	U19OE610EH	3

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF CIVIL ENGINEERING
PROJECT MANAGEMENT (Open Elective-IV)
SYLLABUS FOR B.E. VI SEMESTER

L:T:P(Hrs./week):3: 0 : 0	SEE Marks:60	Course Code: U18OE610CE
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

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

Department of Computer Science & Engineering
INTRODUCTION TO DATABASES (OPEN ELECTIVE-IV)

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

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code :**U18OE610CS**
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 different issues involved in the design and implementation of a database system. 2 Understand transaction processing.	1 Identify the functional components of database management system. Create conceptual data model using Entity Relationship Diagram 2 Transform a conceptual data model into a relational model 3 Design database using normalization techniques 4 Apply indexing and hashing techniques for effective data retrieval 5 Explain transaction processing.

UNIT-I
Introduction: Database System Application, Purpose of Database Systems, View of Data, Database Languages, Relational Database, 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.

UNIT-II
Relational Model: Structure of Relation Database, Relational Algebra Operations, Modification of the Database.
Structured Query Language: Introduction, Basic Structure of SQL Queries, Set Operations, Aggregate Functions, Null Values, Nested Sub queries, Views, Join Expressions.

UNIT-III
Relational Database Design: Features of Good Relational Designs, Atomic Domains and first Normal form, Decomposition Using Functional Dependencies, functional Dependency Theory.

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.

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

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/

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 : 1 Hour 30 Minutes

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

Department of Computer Science & Engineering
INTRODUCTION TO OPERATING SYSTEMS (OPEN ELECTIVE-IV)

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

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code :**U18OE620CS**
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 different Operating system Structures and Services.	1 Compare CPU scheduling algorithms and Operating system structures 2 Apply different techniques for Main memory management. 3 Describe file management techniques. 4 Describe deadlock handling methods 5 Analyze Disk scheduling algorithms and I/O operation implementation techniques

UNIT-I:
Introduction to operating systems: Definition, User view and System view of the Operating system, Operating system structure, Operating system services.
Process: Process concept, Process Control block, Context switching.
CPU Scheduling: Scheduling Criteria, Scheduling Algorithms: FCFS, SJF, Round Robin

UNIT-II:
Memory Management: Swapping, Contiguous memory allocation: Fixed Partitioning, Variable Partitioning. Non-Contiguous memory allocation: Paging.
Virtual memory: Demand paging, Page replacement Algorithms: FIFO, Optimal, LRU.

UNIT –III:

File System Interface: File Concept, Access Methods: Sequential, Indexed, and Direct
File System Implementation: File-System Structure, Allocation Methods: Contiguous, Linked and Indexed.

UNIT –IV:
Deadlocks: System model, deadlock characterization: Mutual Exclusion, Hold and Wait,
Non pre-emption, Circular wait. Deadlock Prevention, Deadlock Avoidance: Banker's algorithm.

UNIT-V:
Device Management: Disk Scheduling algorithms: FCFS, SSTF, SCAN.
I/O System: I/O hardware, Application I/O Interface.

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

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

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

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Internet of Things and Applications
(OPEN ELECTIVE – IV)

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

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **U18OE610EC**
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

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

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Introduction to Mobile Communications
(OPEN ELECTIVE - IV)
SYLLABUS FOR B.E. VI - SEMESTER (for other branches)

L:T:P (Hrs./week) : 3:0:0	SEE Marks : 60	Course Code: **U18OE620EC**
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

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

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Installation and Safety
Open Elective-IV
SYLLABUS FOR B.E. VI SEMESTER

L: T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code:**U18OE610EE**
Credits:3	CIE Marks: 40	Duration of SEE: 3 Hours

COURSE OBJECTIVES The course will enable the students to:	**COURSE OUTCOMES** On completion of the course, students will be able to
Have a fair knowledge about the fundamentals of wiring systems, electrical safety procedures, Estimation of lighting & Power loads.	1. Identify and choose the proper type wiring for domestic & industrial applications. 2. Identify and choose the proper type wiring Accessories for domestic & industrial applications. 3. Apply and implement the Electrical safety procedures for repairs & hazards. 4. Design and Estimate the domestic lighting installation. 5. Design and Draw the wiring layout for a big office building, electrical laboratory, big industry and big hotel with lift arrangement

Unit – I
Wiring Systems: Introduction, size of wires, standard wires, types of wires, CTC, PVC, Lead sheathed VIR, weather proof wires, flexible wires different types of cable wires – Types and Installation of House Wiring Systems or Methods of installing wiring.

Unit – II
Wiring Accessories: - Clips, screws -round blocks switch boards, sockets socket pins - CTS wiring - Installation of surface conduit wiring.Rigid

conduits, flexible conduits – Conduit accessories - elbows bushings - reducers, conduit box saddles, PVC conduit wiring - Concealed wiring.

Unit – III
Safety Devices: Distribution fuse boards - Main switches – Different types of fuses and fuse carriers, MCB, ELCB & MCCB.
Safety procedures – Electric shock and first aid, causes for fire hazards in Electrical installations

Unit – IV
Estimation of Lighting: Estimation of domestic lighting installation service main - types of wire - specification - quantity of materials required for service main – estimation and selection of interior wiring system suitable to a given building - number of circuits - quantity of accessories required - estimates of materials for execution of the domestic wiring installation.

Unit – V
Estimation of power loads: Power wiring installation - Drawing wiring layout for a big office building, electrical laboratory, big industry, big hotel with lift arrangement and a residential building with 2 bed room house.- estimation upto 20 kVA calculation of load current based on ratings of various equipment's to be installed - size of wire.

Learning Resources:
1. J.B.Gupta –A course in Electrical installation Estimating & costing-9th edition 2014, S.K.Kataria& Sons.
2. S.L.Uppal-Electrical Wiring ,Estimating& costing Electrical wiring
3. Balbir Singh-Electrical Drawing
4. Arora -Electrical wiring
5. BVS Rao -Maintenance and Operation of Electrical Equipment –Vol-I- TMH
6. S.Rao -Testing, Commissioning Operation & Maintenance of Electrical equipment -TMH
7. CRDargar -Electrical Installation design and drawing -New Asian publishers.

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

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

Duration of Internal Tests : 90 Minutes

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

DEPARTMENT OF MECHANICAL ENGINEERING

SYLLABUS FOR B.E VI Semester (2020-21)
Additive Manufacturing and its Applications (Open Elective-IV)

Instruction:3Hours / week	SEE Marks:60	Course Code : U18OE610ME
Credits: 3	CIE Marks:40	Duration of SEE : 3 Hours

Course objectives	Course Outcomes
The objectives of this course are to : understand the fundamentals of various additive manufacturing technologies and their applications in Engineering Industry.	On completion of the course the student will be able to: 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**

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031
DEPARTMENT OF MECHANICAL ENGINEERING
SYLLABUS FOR B.E VI Semester (2020-21)
Industrial Administration and Financial Management (Open Elective-IV)

Instruction:3 Hours/ week	SEE Marks:60	Course Code : U18OE620ME
Credits: 3	CIE Marks:40	Duration of SEE : 3 Hours

Course objectives	Course Out comes
The objectives of this course are to: 1. aware about types of business forms, organization structures, plant layouts, merits, demerits and applications. 2. understand method study procedure, PME, time study techniques and wage incentives. 3. importance of PPC and improving quality by control charts and sampling plants. 4. optimization of inventory to minimize total cost and other optimization techniques like LPP, project management techniques. 5. estimate selling price of a product, TVM and budgeting techniques, depreciation methods.	*On completion of the course, the student will be able to:* 1. understand business forms, organization structures and plant layouts. 2. implementation of method study and estimation of standard time. 3. understand types of production, functions of PPC, quality control by charts and sampling. 4. implement optimization techniques like LPP, assignment and project management techniques. 5. understand BEA, estimation of depreciation, selling price of a product and capital budgeting techniques.

UNIT – I
Industrial Organization : Types of various business organisations. Organisation structures and their relative merits and demerits. Functions of management.
Plant location and layouts: Factors affecting the location of plant and layout. Types of layouts and their merits and demerits.

UNIT – II

Work study: Definitions, Objectives of method study and time study. Steps in conducting method study. Symbols and charts used in method study. Principles of motion economy. Calculation of standard time– by– time study and work sampling. Performance rating factor. Types of ratings. Jobs evaluation and performance appraisal. Wages, incentives, bonus, wage payment plans.

UNIT – III

Inspection and quality control: Types and objectives of inspection S.Q.C., its principles quality control by chart and sampling plans. Quality circles, introduction to ISO.

Production planning and control: Types of manufacture. Types of production. Principles of PPC and its function. Production control charts.

UNIT – IV

Optimisation: Introduction to linear programming and graphical solutions. Assignment problems.

Project Management: Introduction to CPM and PERT. Determination of critical path.

Material Management: Classification of materials. Materials planning. Duties of purchase manager. Determination of economic order quantities. Types of materials purchase.

UNIT – V

Cost accounting: elements of cost. Various costs. Types of overheads. Break even analysis and its applications. Depreciation. Methods of calculating depreciation fund. Nature of financial management. Time value of money. Techniques of capital budgeting and methods. Cost of capital. financial leverage.

Learning Resources:

1. Pandey I.M., "Elements of Financial Management", Vikas Publ. House, New Delhi, 1994
2. Khanna O.P., "Industrial Engineering and Management", Dhanapat Rai & Sons.
3. Everrete E Admaa & Ronald J Ebert , "production and Operations Management", 5th Ed. , PHI , 2005
4. S N Chary, "Production and Operations Management", 3rd Ed. , Tata McGraw Hill, , 2006
5. Pannerselvam, "production and Operations Management", Pearson Education, 2007

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

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

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

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

INTRODUCTION TO WEB APPLICATION DEVELOPMENT
(OPEN ELECTIVE-V) (Common for CIVIL, ECE, EEE & MECH)
SYLLABUS FOR B.E VI- SEMESTER

L:T:P(Hrs./week): 3:0:0	SEE Marks : 60	Course Code : **U18OE610IT**
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hrs

	COURSE OUTCOMES
COURSE OBJECTIVES	*On completion of the course, students will be able to*
Acquire basic skills for designing static and dynamic Web Applications using HTML, CSS , Java script and PHP.	1. Design a static web pages using HTML, CSS. 2. Use JavaScript for creating dynamic web pages and client side validation. 3. Use built-in functions of PHP to perform server side validations and sending emails. 4. Use built-in functions of PHP to connect , query and fetch results from a database. 5. Build a PHP application using an MVC Framework.

UNIT-I: Introduction
Introduction: World Wide Web, Web Browsers, Web Servers, URL, HTTP, TCP Port. HTML: Standard HTML document structure, Basic Tags, Images, Hypertext Links, Lists, Tables, Frames. CSS: In-line style sheets, Internal Style sheets and External Style sheets.

UNIT-II: Basics of JavaScript
JavaScript: Introduction, Basics of JavaScript-variables, data types and operators, Control Structures, Arrays, Functions, HTML Forms, Events and event handling.

UNIT-III: Basics of PHP
Basics of PHP: Data Types, Variables and Operators, Control Structures: If else, Switch Case. Loop: For, ForEach, While, Do While. Functions in PHP, PHP Forms, Cookies & Sessions, File Processing.

UNIT-IV: Advanced PHP
Advanced PHP: PHP E-Mail, Filters, Database Access, OOPS in PHP. Application using PHP.

UNIT-V: Introduction to MVC
Introduction to Model View Controller Architecture, Building Application using a PHP Framework, Testing and Deploying a PHP application.

Learning Resources:
"Web Technologies", 7th Edition, Uttam K.Roy,2012.
"Internet & World Wide Web How to Program", 5/e, Paul J. Deitel, Harvey M. Deitel, Abbey Deitel,2012.

The break-up of CIE: Internal Tests+ Assignments + Quizzes
1	No. of Internal Tests	: 2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	: 3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	: 3	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests   : 90 Minutes

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

INTRODUCTION TO MACHINE LEARNING
(OPEN ELECTIVE-V) (Common for CIVIL, ECE, EEE & MECH)
SYLLABUS FOR B.E VI- SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks :60	Course Code: **U18OE620IT**
Credits : 3	CIE Marks: 40	Duration of SEE :3Hrs

COURSE OBJECTIVES	**COURSE OUTCOMES**
	On completion of the course, students will be able to
Introduce the fundamental concepts and approaches in Artificial intelligence and Machine Learning field to effectively apply techniques to the real-world problems.	1. Demonstrate knowledge of the Artificial intelligence and machine learning literature. 2. Apply an appropriate algorithm for a given problem. 3. Apply machine learning techniques in the design of computer systems. 4. Prove basic results in the theory of learning 5. Explain the relative strengths and weaknesses of different machine learning methods and approaches.

UNIT-I:
Introduction to AIML: Foundations of AI, Sub areas of AI, Applications. Introduction to learning, Types of Learning: Supervised Learning, Unsupervised Learning, Reinforcement Learning.
Supervised learning: Linear Regression, Logistic Regression.

UNIT-II:
Supervised Non-parametric learning: Introduction to Decision Trees, K-Nearest Neighbor, Feature Selection.
Supervised Parametric learning: Support Vector Machine, Kernel function and Kernel SVM.

UNIT-III:
Supervised Parametric learning (Neural networks): Perceptron, Multilayer Neural Network, Backpropagation.

UNIT-IV:
Supervised Parametric Bayesian learning: Introduction, Naive Bayes Classification, Bayesian Network.

UNIT-V:
Unsupervised leaning: Clustering, K-means Clustering, DBSCAN

Learning Resources:
Tom Mitchell, Machine Learning, First Edition, McGraw-Hill, 1997
Christopher Bishop. Pattern Recognition and Machine Learning. Second Edition.
EthemAlpaydin , Introduction to Machine Learning, Second Edition
T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning, 2e, 2008.
http://nptel.ac.in/courses/106106139/

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- VI Semester

TECHNICAL WRITING AND PROFESSIONAL PRESENTATIONS
(Common to all branches)

L:T: P (Hrs/Week):3	SEE Marks:60	Course Code: U19OE010EH
Credits: 3	CIE Marks:40	Duration of SEE:Hours:03

COURSE OBJECTIVES	COURSE OUTCOMES
This course introduces the principles and mechanics of technical writing for students of engineering. Students will learn: 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. How to make effective presentations as part of today's workplace demands.	**At the end of the course the student will be able to** 4. write effective reports 5. research and write project proposals and SoPs 6. 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: -

6. Effective Technical Communication, M Ashraf Rizvi, Tata McGraw-Hill Education, 2005
7. Raman, Meenakshi & Sangeeta Sharma. Technical Communication: Principles and Practice. Second Edition. New Delhi: Oxford University. Press, 2011.
8. Hacking Your Statement of Purpose: A Concise Guide to Writing Your SOP, Milena Young, 2014.
9. 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.

10. Successful Presentations (with DVD): John Hughes & Andrew Mallett. Oxford university Press.

The break-up of marks for CIE:
Internal Tests (2); Quiz Tests (3) + Assignments (3)

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

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IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
(OPEN ELECTIVE) - B.E 3/4 -VI SEMESTER

ENGLISH FOR COMPETITIVE EXAMINATIONS
(Common to all branches)

L:T: P (Hrs/Week):3	SEE Marks:60	Course Code: U19OE610EH
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:**
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.
To practice questions and prepare for GATE, GRE, CAT, TOEFL.	2. 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 marks for CIE:
Internal Tests (2); Quiz Tests (3) + Assignments (3)

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Duration of Internal Tests   : 90 minutes