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) VII and VIII Semesters

With effect from 2021-22
(For the batch admitted in 2018-19)
(R-18)

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

With effect from the Academic Year 2020-21

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.

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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.

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION(R-18)
FOR B.E 2018-19 ADMITTED BATCH VII SEMESTER (A.Y 2021-22)

B.E VII Semester									
S. No	Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
			Hours per Week			Duration In Hrs	Maximum Marks		Credits
			L	T	P/D		SEE	CIE	
THEORY									
1	U18PC710CS	Distributed Systems and Cloud Computing	3	-	-	3	60	40	3
2	U18PC720CS	Compiler Construction	3	-	-	3	60	40	3
3	U18PE7XXCS	Professional Elective-II	3	-	-	3	60	40	3
4	U18PE7XXCS	Professional Elective-III	3	-	-	3	60	40	3
5	U18PE7XXCS	Professional Elective-IV	3	-	-	3	60	40	3
PRACTICALS									
6	U18PC711CS	Distributed Systems and Cloud Computing Lab	-	-	2	3	50	30	1
7	U18PC721CS	Compiler Construction Lab			2	3	50	30	1
8	U18PW719CS	Mini Project -II	-	-	2	3	-	30	1
9	U18PW729CS	Project Seminar	-	-	2	-	-	30	1
TOTAL			**15**		**8**		**400**	**320**	**19**
GRANDTOTAL			**23**				**720**		

	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 -VII	PE-II	U18PE710CS	Data Mining	U18PE 720CS	Multi-core and GPU Computing	U18PE 730CS	Software Design tools and methodologies	U18PE 740CS	Computer vision
	PE-III	U18PE750CS	Deep Learning	U18PE 760CS	Information Storage Management	U18PE 770CS	Software Testing Methodologies	U18PE 780CS	Information Security
	PE -IV	U18PE714CS	Data Science	U18PE 724CS	Advanced Databases	U18PE 734CS	Software Processes and Agile Practices	U18PE 744CS	Pattern Recognition

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

DISTRIBUTED SYSTEMS & CLOUD COMPUTING

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week):3:0:0	SEE Marks :60	Course Code: **U18PC710CS**
Credits :3	CIE Marks :40	Duration of SEE : 3Hours

COURSEOBJECTIVES	**COURSEOUTCOMES** On completion of the course, students will be able to
1 Explain distributed System and cloud models 2 Apply distributed computational model and understand the need for cloud computing.	1 Explain distributed system models and cloud service & deployment models. 2 Analyze the need for virtualization in a cloud environment and apply it in compute, Memory and storage levels 3 Explain distributed computation model on large datasets using parallel and distributed programming approaches over cloud platforms. 4 Analyze the security issues on SPI infrastructure and explain the need for Homomorphic encryption 5 Explain the role of trust and energy efficiency in cloud

UNIT: I

Distributed System Models& Enabling technology: Scalable computing over the internet, Technologies for network based system, System models for distributed & cloud, Software environments for distributed & Cloud.

Time and Global States: Introduction, Clocks events and process states, synchronizing physical clocks, Logical clocks, Global states

Introduction to Cloud Computing: Cloud Computing in a Nutshell System Model for Distributed and Cloud Computing, Roots of Cloud Computing, Grid and Cloud, Layers and Types of Clouds, Desired Features of a Cloud, Basic Principles, of Cloud Computing, Challenges and Risks, Service Models

UNIT II:

Virtual Machines and Virtualization of Cluster and Data Centres: Levels of Virtualization, Virtualization structures/Tools and Mechanism, Virtualization of CPU, Memory and I/O Devices, Virtual Clusters and Resources Management, Virtualization Data-Centre Automation

UNIT III:

Service Oriented Architecture for Distributed Computing: Services & SOA, Message Oriented Middleware, Workflow in SOA.

Cloud Programming & Software Environments: Features of Cloud & Grid, Parallel &Distributed programming paradigms, Programming support of Google Cloud, Amazon AWS & Azure.

Case Studies: OpenStack & Aneka

UNIT IV:

Cloud Security, Data Security in the Cloud: An Introduction to the Idea of Data Security, The Current State of Data Security in the Cloud Crypt Db:Onion Encryption layers -DET, RND, OPE, JOIN, SEARCH, HOM, and Homomorphism Encryption, FPE.

UNIT V:

Trust Management & Green Cloud

Trust, Reputation and Security Management in P2P Systems, Load Balancing-HAProxy, Container based Virtualization-Docker, Green Cloud- Energy Consumption Models and Energy-aware Data Centers and Clouds

Learning Resources:

1. Kai Hwang. Geoffrey C. Fox, Jack J. Dongarra, "Distributed and Cloud Computing from parallel processing to the internet of things", Elsevier, 2012.
2. Rajkumar Buyya, James Broberg and Andrzej M. Goscinski, "Cloud Computing: principles and paradigms (Wiley Series on Parallel and Distributed Computing), Wiley Publishing (c) 2011.
3. Raluca Ada Popa, Catherine M.S. Redfiled, NickolaiZeldovich, and Hari Balakrishnan, "Crypt DB" Protecting confidentiality with encrypted Query Processing" 23rd ACM Symposium on Operating Systems principles (SOSP 2011), Cascais, Portugal October 2011.
4. Craig Gentry,A fully Homomorhic Encryption Scheme, Doctoral Dissertation, September 2009
5. Ajay D. Kshemkalyani and Mukesh Singhal,Distributed Computing: Principles, Algorithms, and Systems, Cambridge, 2008
6. https://onlinecourses.nptel.ac.in/noc18_cs45/
7. https://cloud.google.com/load-balancing/docs/

8. https://docs.microsoft.com/en-us/azure/load-balancer/load-balancer-overview
9. https://www.docker.com/resources/what-container
10. http://www.haproxy.org/

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

COMPILER CONSTRUCTION

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: **U18PC720CS**
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	Analyze various phases of compiler and design a compiler for a generic machine	1	Compare different language Processors and design Lexical Analyzer for a given language
2	Build efficient target code applying various code optimization techniques	2	Design Parser using top down and bottom up parsing techniques
		3	Generate Intermediate code for a given set of instructions
		4	Choose a data structures for symbol table organization and dynamic memory management
		5	Apply various code optimization techniques to generate efficient target code

UNIT I:

Introduction: Programs related to compilers, Translation process, Major data structures, Other issues in compiler structure, Boot strapping and porting.

Lexical analysis: The role of Lexical Analyzer, Input Buffering, Specification of Tokens. Recognition of Tokens, Error Recovery, The Lexical-Analyzer Generator LEX.

UNIT-II

Syntax Analysis : Introduction, Top-Down parsing-Recursive Descent, Predicative LL(1), Bottom-Up parsing- Introduction to LR Parsing, Powerful LR parsers SLR, CALR, LALR, Error recovery in top down and bottom up parsers, Parser Generators -YACC.

UNIT-III

Syntax Directed Translation: Syntax Directed Definitions, Evaluation Orders for SDDs, Applications of Syntax Directed Translation.

Intermediate code generation: Variants of syntax trees, Three-Address Code, Types and Declarations, Translation of Expressions, Type Checking. Control Flow.

UNIT-IV

Storage Organization: Stack Allocation of Space, Access to Non local Data on the Stack. Heap Management, Introduction to Garbage Collection

Symbol Table Organization: Structure of Symbol table, Symbol Table organization for Block Structured and non block Structure languages, Data Structures of symbol Table.

UNIT-V

Code Generation: Issues in the Design of a Code Generator, The Target Language, Addresses in the Target Code Basic Blocks and Flow Graphs.

Code Optimization: Optimization of Basic Blocks. Peephole Optimization, Register Allocation and Assignment, Machine Independent Optimizations – The Principal Sources of Optimizations, Introduction to data flow analysis.

Learning Resources:

1. Alfred V Aho, Monica S Lam, Ravi Sethi, Jeffrey D Ullman,Compilers: Principles, Techniques &Tools,2nd Edition(2007), Pearson Education.
2. Keith d Cooper & Linda Tarezon, Engineering a Compiler, 2nd Edition(2011), Morgan Kafman.
3. John R Levine, Tony Mason, Doug Brown Lex&Yacc, 3rd Edition(2007), Shroff Publisher .
4. Kenneth C Louden , Compiler Construction: Principles and Practice, 2nd Edition(2005) ,Cengage Learning,
5. John R Levine ,Lex&Yacc, 2nd Edition(2009), Oreilly Publishers.
6. http://nptel.ac.in/courses/106108052/1
7. http://freevideolectures.com/Course/3051/Compiler-Design

With effect from the Academic Year 2021-22

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

DATA MINING (Professional Elective-II)

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: **U18PE710CS**
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 the steps involved in KDD, understand various data pre-processing techniques and data mining functionalities	1 Explain the steps in KDD, Identify various pre-processing techniques and compute similarity among data objects
2 Learn different classification, Clustering and Association rule mining techniques	2 Construct Multidimensional data models to represent data cubes and perform characterization & generalization tasks on data cubes 3 Compute associations and correlations among items by mining frequent patterns from transactional databases 4 Build model to classify unknown data objects 5 Build clusters using clustering techniques and evaluate clusters formed

UNIT-I:

Introduction: Fundamentals of Data Mining, Kinds of Patterns can be mined, Technologies Used, Applications and Issues in Data Mining

Types of Data: Attribute types, Basic Statistical descriptions of Data, Measuring data Similarity and Dissimilarity

UNIT-II:

Data Preprocessing: Need of Preprocessing, Data Cleaning, Data Integration, Data Reduction, Data Transformation

Data Warehouse and OLAP: Data Warehouse, Data Warehouse Modeling, Data Warehouse Design and Usage, Data Warehouse Implementation, Data Generalization by Attribute-oriented induction

UNIT-III:

Mining Frequent Patterns, Associations and Correlations: Market Basket Analysis, Association rule mining, Frequent Item set mining methods, Pattern Evaluation methods, Constraint based frequent pattern mining, Mining Multilevel and Multidimensional patterns

UNIT-IV:

Classification : General approach to classification, Classification by Decision Tree Induction , Bayes Classification methods, Bayesian Belief Networks, Classification by Backpropagation, Lazy Learners, Other Classification methods, Classification using Frequent patterns, Model Evaluation and selection

UNIT-V:

Cluster Analysis: Basic Clustering methods, Partitioning methods, Density – Based Methods, Grid-based methods, and Evaluation of Clustering, Outlier Analysis and Detection methods

Learning Resources:

1. Jiawei Han & Micheline Kamber and Jain Pei ,Data Mining Concepts and Techniques , Third Edition(2011), India.
2. Pang-Ning Tan, Vipin Kumar, Michael Steinbach, "Introduction to Data Mining", (2017),Pearson Education,
3. Margaret H Dunham, Data Mining Introductory and advanced topics , Pearson education
4. Arun K Pujari ,Data Mining Techniques, (2017) ,University Press
5. Sam Anahory , Dennis Murray ,Data Warehousing in the Real World, Pearson Education
6. Paulraj Ponnaiah, Data Warehousing Fundamentals, Wiley Student ed. http://web.stanford.edu/class/cs345a/

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

INFORMATION SECURITY **(**Professional Elective-III)

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: **U18PE780CS**
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 Learn legal and technical issues in building secure information systems. 2 Understand security standards and practices.	1 Understand various components of Information Security 2 Identify types of threats and the associated attacks to information security 3 Analyze strategies to protect information assets from common attacks 4 Evaluate security policies, standards and practices 5 Identify the role of management in enforcing security policies and standards

UNIT-I:

Introduction: History, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, the SDLC, the Security SDLC.

Need for Security: Business Needs, Threats, Attacks, and Secure Software Development

UNIT-II:

Legal, Ethical and Professional Issues: Law and ethics in Information Security, Relevant U.S. Laws, International Laws and Legal Bodies, Ethics and Information Security.

Risk Management: Overview, Risk Identification, Risk Assessment, Risk Control Strategies, Selecting a Risk Control Strategy, Quantitative versus Qualitative Risk Control Practices, Risk Management discussion Points, and Recommended Risk Control Practices.

UNIT-III:

Planning for Security: Security policy, Standards and Practices, Security Blue Print, Security Education, Continuity strategies.
Security Technology: Firewalls and VPNs: Physical Design, Firewalls, Protecting Remote connections.

UNIT-IV:
Security Technology: Intrusion Detection, Access Control, and other Security Tools: Intrusion Detection and Prevention Systems-Scanning, and Analysis Tools- Access Control Devices.
Cryptography: Foundations of Cryptology, Cipher methods, Cryptographic Algorithms, Cryptographic Tools, Protocols for Secure Communications, Attacks on Cryptosystems.

UNIT-V:
Implementing Information Security: Information security project management, Technical topics of implementation, Non Technical Aspects of implementation, Security Certification and Accreditation. **Security and Personnel:** Positioning and staffing security function, Employment Policies and Practices, and Internal control Strategies. Information Security Maintenance: Security management models, Maintenance model, and Digital Forensics.

Learning Resources:

1. Michael E Whitman and Herbert J Mattord, Principles of Information Security, (2011), Cengage Learning.
2. Thomas R Peltier, Justin Peltier, John Blackley, Information Security Fundamentals,(2010), Auerbach Publications.
3. Detmar W Straub, Seymour Goodman, Richard L Baskerville, Information Security,Policy, Processes, and Practices, (2008), PHI.
4. Mark Merkow and Jim Breithaupt, Information Security Principle and Practices, (2007), Pearson Education.
5. http://nptel.ac.in/courses/106106129/

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

ADVANCED DATABASES (Professional Elective-IV)

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks:60	Course Code:**U18PE724CS**
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 knowledge of advanced database management techniques to provide solution for a database intensive problem.	1 create and query tables in object relational and object oriented databases 2 create, query and process data in XML files 3 describe query processing mechanisms and query optimization 4 explain inter query, intra query parallelism and distributed database processing techniques 5 apply performance tuning methods and describe data representation in spatial, geographical and temporal databases

UNIT-I: Object Based Databases: Overview, Complex Data Types, Structured Types and Inheritance in SQL, Table Inheritance, Array and Multiset Types in SQL, Object-Identity and Reference Types in SQL, Implementing O-R features, Persistent Programming Languages, Object-Relational Mapping, Object-Oriented versus Object-Relational.

UNIT-II: XML: Motivation, Structure of XML data, XML Document Schema, Querying and Transformation, Application program Interfaces to XML, Storage of XML Data, XML applications.

UNIT-III: Query Processing: Overview, Measures of Query Cost, Selection Operation, Sorting, Join Operation, Other Operations, Evaluation of Expressions.

Query Optimization: Overview, Transformation of Relational Expressions, Estimating Statistics of Expression Results, Choice of Evaluation Plans, Materialized Views.

UNIT-IV: Parallel Databases: Introduction, I/O Parallelism, Interquery Parallelism, Intraquery Parallelism, Interoperation Parallelism, Interoperation Parallelism.

Distributed Databases: Homogeneous and Heterogeneous Databases, Distributed Data Storage, Distributed Transactions, Commit Protocols, Concurrency Control in Distributed Databases, Heterogeneous Distributed Databases, and Cloud-Based Databases.

UNIT-V: Advanced Application Development: Performance Tuning, Performance Benchmarks, Other Issues in Application Development, Standardization.

Spatial and Temporal Data and Mobility: Motivation, Time in Databases, Spatial and Geographic Data, Multimedia Databases, Mobility and Personal Databases.

Learning Resources:

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

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

DISTRIBUTED SYSTEMS & CLOUD COMPUTING LAB

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : 50	Course Code: **U18PC711CS**
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 distributed transactions 2 Install, configure and deploy applications using various cloud platforms	1 Implement a distributed transaction model 2 Launch and run a highly available web application on Amazon cloud platform 3 Deploy and develop scalable compute model using Distributed Storage 4 Develop full stack application using Google cloud 5 Develop an end to end application over a Cloud environment

Programming Exercise:

Programming Exercise:

1. Design a TCP & UDP socket based communication system
2. Design a Web service using Simple Object Access Protocol (SOAP)
3. Developing a Multichat application
4. Implement a 2PC for distributed transaction management.
5. Hosting a static website on Amazon AWS
6. Deploying a Node.js Web Application using AWS services
7. Use native MySQL connections from Google App Engine to Google Cloud SQL
8. Deploying a cloud application on Google App Engine using backed database hosted on Google Cloud SQL to perform CRUD operations
9. Deploy a EMR Cluster for doing Big data analytics using Spark
10. Installation and deploying a PhP application on a Docker Container
11. Implement a distributed application on Hadoop framework to count word frequency with Map Reduce
12. Deploy a Node.js application on a Docker container

Learning Resources:

1. George Coulouris, Jean Dollimore, Tim Kindberg, Gordon Blair, DISTRIBUTED SYSTEMS Concepts and Design, Fifth Edition, Addison-Wesley, 2012.
2. Kai Hwang. Geoffrey C. Fox, Jack J. Dongarra, "Distributed and Cloud Computing from parallel processing to the internet of things", Elsevier, 2012.
3. Rajkumar Buyya, James Broberg and Andrzej M. Goscinski, "Cloud Computing: principles and paradigms (Wiley Series on Parallel and Distributed Computing), Wiley Publishing (c) 2011.
4. Raluca Ada Popa, Catherine M.S. Redfiled, NickolaiZeldovich, and Hari Balakrishnan, "Crypt DB" Protecting confidentiality with encrypted Query Processing" 23rd ACM Symposium on Operating Systems principles (SOSP 2011), Cascais, Portugal October 2011.
5. Craig Gentry, A fully Homomorhic Encryption Scheme, Doctoral Dissertation, September 2009.
6. Ajay D. Kshemkalyani and Mukesh Singhal, Distributed Computing: Principles, Algorithms, and Systems, Cambridge, 2008.
7. https://www.virtualbox.org/wiki/Documentation
8. https://cloud.google.com/docs
9. https://docs.aws.amazon.com/
10. https://docs.microsoft.com/en-us/azure/?product=featured
11. https://wiki.openstack.org/wiki/Documentation
12. http://www.manjrasoft.com/aneka_architecture.html
13. https://www.docker.com/resources/what-container
14. http://www.haproxy.org/

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

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

COMPILER CONSTRUCTION LAB

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks:50	Course Code**: U18PC721CS**
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 phases of a compiler using YACC, LEX tools	1 Implement lexical analyzer
2 Apply Various code optimization techniques to develop efficient target code	2 Develop first and follow set for a given grammar 3 Design top down and bottom up parsers 4 Implement code generator 5 Implement code optimization

Programming Exercise:

1. Scanner programs using C
2. Scanner programs using LEX
3. Find first set and follow set
4. Implementation of Recursive decent parser
5. Implementation of LL(1) parser.
6. Implementation of SLR parser.
7. Implementation of CLR parser.
8. Implementation of LALR Parser using ANTLR
9. Construct dependency graph for the given SDD
10. Intermediate Code generation using YACC
11. Construct the DAG for given three address code
12. Build a Tiny compiler for the C language using LEX and YAAC

Learning Resources:

1. Alfred V Aho, Monica S Lam, Ravi Sethi, Jeffrey D Ullman – *Compilers: Principles, Techniques &Tools ,* 2nd Edition, Pearson Education 2007.
2. Keith d Cooper & Linda Tarezon, *Engineering a Compiler, Morgan Kafman*, 2nd Edition
3. John R Levine, Tony Mason, Doug Brown *Lex &Yacc*, 3rd Edition Shroff Publisher,2007
4. Kenneth C Louden , *Compiler Construction: Principles and Practice*, 2nd Edition ,Cengage Learning, 2005
5. John R Levine ,*Lex&Yacc*, Oreilly Publishers,2nd Edition, 2009.
6. http://nptel.ac.in/courses/106108052/1
7. http://freevideolectures.com/Course/3051/Compiler-Design

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

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

MINI PROJECT-II (DATA MINING LAB)

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks:--	Course Code**: U18PW719CS**
Credits : 1	CIE Marks:30	Duration of SEE : --

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1 Implement various data mining functionalities 2 Design a data warehouse using an ETL tool	1 Implement Multidimensional data models 2 Implement Association rule mining algorithms and Clustering algorithms 3 Implement Classification algorithms 4 Implement Association rule mining algorithms , Classification algorithms and Clustering algorithms with modern data mining tool WEKA 5 Design a data warehouse using Informatica

Programming Exercise:

1. Implement similarity and dissimilarity measures on different type of attributes
2. Find statistical properties of data by using mean, mode, median, Quartile 1(Q1),, Quartile (Q3) and Inter Quartile Range (IQR)

3. Implement the following Multidimensional Data Models
   i. Star Schema
   ii. Snowflake Schema
   iii. Fact Constellation

4. Implement Apriori algorithm to generate frequent Item Sets

5. Implement the following clustering algorithms
   i. K-means

ii. K-mediods
iv. DB-SCAN

6. Implement the following classification algorithms
   i. Decision Tree Induction
   ii. KNN
   iii. Naïve bayes
7. Perform data Preprocessing using WEKA
8. Perform Discritization of data using WEKA
9. Classification algorithms using WEKA
10. Apriori algorithm using WEKA
11. Perform data transformations using an ETL Tool
12. A small case study involving all stages of KDD. (Datasets are available online like UCI Repository etc.)

Learning Resources:

1. Jiawei Han & Micheline Kamber and Jain Pei ,Data Mining Concepts and Techniques , Third Edition(2011), India.
2. Pang-Ning Tan, Vipin Kumar,Michael Steinbach, "Introduction to Data Mining", (2017),Pearson Education,
3. Margaret H Dunham, Data Mining Introductory and advanced topics , Pearson education
4. Arun K Pujari ,Data Mining Techniques, (2017) ,University Press
5. Sam Anahory , Dennis Murray ,Data Warehousing in the Real World, Pearson Education
6. PaulrajPonnaiah, Data Warehousing Fundamentals, Wiley Student ed. http://web.stanford.edu/class/cs345a/

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

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

PROJECT SEMINAR

SYLLABUS FOR B.E. VII-SEMESTER

L:T:P (Hrs./week): 0:0:2	SEE Marks : --	Course Code:**U18PW729CS**
Credits : 1	CIE Marks : 30	Duration of SEE : --

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1 Select a Problem by reviewing Literature 2 Present the selected topic effectively in oral & written form	1 Select a problem related to Computer science area by reviewing the Literature 2 Analyze the existing solutions for the problem identified 3 Identify the gaps in the existing solutions 4 Present the analysis of the identified problem 5 Design a Document according to the format

Oral presentation is an important aspect of Engineering education. The objective of the Project seminar is to prepare the student for a systematic and independent study of the state of the art topics in a broad area of his/her specialization of the Project.

Project Seminar topics may be chosen by the students with advice from the faculty members. Students are to be exposed to the following aspects of a seminar presentation.

- Problem Definition and Specification
- Literature survey
- Broad Knowledge of available techniques to solve a particular problem
- Organization of the material
- Presentation

Each student is required to :

1. Submit a one page synopsis before the seminar talk.
2. Give a 20 minute presentation followed by a 10 minute discussion.
3. Submit a report on the seminar topic with a list of references.

Seminars are to be scheduled from the 3rd week to the last week of the semester and any change in schedule should be discouraged. For award of the Sessional marks, students are to be judged by at least two faculty members on the basis of an oral and written presentation as well as their involvement in the discussions.

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
SCHEME OF INSTRUCTION AND EXAMINATION (R-18)
FOR B.E 2018-19 ADMITTED BATCH VIII SEMESTER (A.Y 2021-22)

B.E VIII (CSE) Semester									
Sl. No.	**Course Code**	**Name of the Course**	**Scheme of Instruction**			**Scheme of Examination**			
			Hours per Week			**Duration in Hrs**	**Maximum Marks**		**Credits**
			L	**T**	**P/D**		**SEE**	**CIE**	
THEORY									
1	U18PE8XXCS	Professional Elective-V	3	-	-	3	60	40	3
2	U18PE8XXCS	Professional Elective-VI	3	-	-	3	60	40	3
	PRACTICALS								
3	U18PW819CS	Project /Internship	-	-	12	Viva-Voce	50	50	6
		TOTAL	**6**	**-**	**12**	**-**	**170**	**130**	**12**
		GRAND TOTAL	**18**			**-**	**300**		

		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 -VIII	PE-V	U18PE810CS	Robotic Process Automation	U18PE 820CS	Ad hoc and Sensor Networks	U18PE 830CS	Software Quality Management	U18PE 840CS	Simulation and Modelling
	PE -VI	U18PE850CS	Natural Language Processing	U18PE 860CS	Mobile Communications	U18PE 870CS	Secure Software Design	U18PE 880CS	Block chain Architecture

With effect from the Academic Year 2021-22

VASAVI COLLEGE OF ENGINEERING(Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

Department of Computer Science & Engineering

ROBOTIC PROCESS AUTOMATION

(Professional Elective-V)

SYLLABUS FOR B.E. VIII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: **U18PE810CS**
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 knowledge of basic concepts of Robotic Process Automation 2 Build on these concepts and get introduced to key RPA Design and Development strategies and develop flow charts.	1 Understand Robotic Process Automation technology. 2 Apply programming techniques to deploy robot configurations 3 Explore various data extraction techniques and perform integrations with various popular applications 4 Design and develop a programmed robot that includes logging and exception handling 5 Deploy and control Bots with an Orchestrator.

UNIT-I:

Introduction: What is Robotic Process Automation (RPA), Scope & techniques of Automation, Benefits of RPA, Components of RPA, RPA Platforms, RPA products, Introduction to Hyper automation

Sequence, Flowchart & Control Flow: Sequencing the Workflow, Activities, Flowchart, Control Flow for Decision making.

UNIT-II:

Data Manipulation: Variables, Collection, Arguments, Data Table, Clipboard management, File operations

Controls: Finding the control, waiting for a control, Act on a control, UiExplorer, Handling Events

Recording and advanced UI Interaction

Basic recording, Desktop recording, Web recording, When to use OCR, Types of OCR available, How to use OCR Avoiding typical failure points.

UNIT-III:

Plugins and Extensions: Mail plugin, PDF plugin, Web integration, Excel and Word plugins, Credential management Extensions

Handling User Events and Assistant Bots: What are assistant bots, Monitoring system event triggers: Hotkey trigger, Mouse trigger, System trigger, Monitoring image and element triggers, Launching an assistant bot on a keyboard event

UNIT-IV:

Exception Handling, Debugging, and Logging: Exception handling, Common exceptions and ways to handle them, Logging and taking screenshots Debugging techniques, Setting breakpoints, Slow step.

Orchestrator: Overview of Orchestration Server, Using Orchestration Server to control bots

UNIT-V:

Deploying and Maintaining the Bot: Publishing using publish utility, Using Orchestration Server to deploy bots, License management, Activating and uploading a license to Orchestrator, Publishing and managing updates, Packages, Managing packages, Apps, AI Centre.

Capstone Projects: Invoice Processing Robot, Email Categorization Robot

Learning Resources:

1. Alok Mani Tripathi, Learning Robotic Process Automation, Publisher: OReilly Publishing, 2018, ISBN: 9781788470940
2. Frank Casale (Author), Rebecca Dilla (Author), Heidi Jaynes (Author), Lauren Livingston (Author), Introduction to Robotic Process Automation: a Primer, Institute of Robotic Process Automation, Amazon Asia-Pacific Holdings Private Limited, 2018
3. Richard Murdoch, Robotic Process Automation: Guide To Building Software Robots, Automate Repetitive Tasks & Become An RPA Consultant, Amazon Asia-Pacific Holdings Private Limited, 2018

4. Srikanth Merianda, Robotic Process Automation Tools, Process Automation and their benefits: Understanding RPA and Intelligent Automation, 1st Edition, Consulting Opportunity Holdings LLC, 2018
5. https://www.uipath.com/rpa/robotic-process-automation
6. https://www.udemy.com/robotic-process-automation/

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
ADHOC SENSOR NETWORKS
(Professional Elective-V)

SYLLABUS FOR B.E. VIII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code **:U18PE820CS**
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 design issues and applications of an Ad hoc and sensor network.	1 Compare topologies based and position based routing approaches. Explain the environments and communication systems in an Ad hoc network. 2 Categorize data transmission techniques in MANETs and the network architecture of wireless mesh networks. 3 Illustrate the Cognitive Radio technologies and issues of TCP over ad hoc networks. 4 Explain the design and network issues of a sensor network. 5 Identify the security mechanisms of an ad hoc and sensor network. Integrate MANETs, WLANs and Cellular Networks.

UNIT-I:
Introduction: Introduction, Application of MANETs, Challenges
Routing in Ad Hoc Networks: Topology Based Routing Protocols – Proactive Routing , Reactive Routing and Hybrid Routing, Position Based Routing - Principles and Issues, Location Services, Forwarding Strategies

UNIT-II: Broadcasting, Multicasting and Geocasting
Wireless Mesh Networks: Introduction, Network Architecture, Challenging technologies

UNIT-III:

Cognitive Radio and Networks: Introduction, Spectrum Access Models, Cognitive Radio Technologies and Challenges, The IEEE 802.22 Standard

TCP over Ad Hoc Networks: TCP protocol overview, Solutions for TCP over Ad hoc

UNIT-IV:

Sensor Networks Design Considerations: Introduction, Design Issues, Localization Scheme, clustering of SNs, MAC layer, The Self-organizing MAC for WSNs and the Eaves-drop-and-Register protocol.

Sensor Networks in Controlled Environment and Actuators: Regularly placed sensors**,** Design Issues, Network Issues

Applications of Sensor Networks: Body Area Network, Habitat monitoring, Health Care Monitoring, Greenhouse monitoring

UNIT-V:

Security in Ad Hoc and Sensor Networks:

Distributed systems security, Secure routing, Cooperation in MANETs, WSN Security.

Integrating MANETs, WLANs and Cellular Networks: Ingredients of a heterogeneous architecture, Protocol Stack, Comparison of the Integrated Architectures

Learning Resources:

1. Carlos de Morais Cordeiro and Dharma Prakash Agrawal, "Ad Hoc and Sensor Networks : Theory and Applications", Second Edition, World Scientific Publishers, 2011
2. Prasant Mohapatra and Sriramamurtyhy, "Ad Hoc Networks: Technologies and Protocols", Springer International Edition, 2009.
3. Kazem Sohraby, Daniel Minoli, TaiebZnati, "Wireless Sensor Networks', A John Wiley & Sons Inc. Publication, 2007.
4. https://nptel.ac.in/courses/106105160/
5.

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

With effect from the Academic Year 2021-22

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

Department of Computer Science & Engineering
NATURAL LANGUAGE PROCESSING
(Professional Elective-VI)

SYLLABUS FOR B.E. VIII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: **U18PE850CS**
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. Learn the concepts of Natural Language processing. 2. Gain practical understanding of relevant terminology, concepts in Natural Language Processing.	1 Design Finite-State Transducers for morphological parsing. Apply N-grams for language modeling. 2 Apply part-of speech tagging algorithms for labeling text data. Analyse the syntax of sentences using parsing techniques. 3 Analyse documents using TF-IDF vector model. Extract sentiment and affect from the given text 4 Apply RNNs for language modeling and Machine translation. 5 Analyse working of chatbots and speech recognition and synthesis systems.

UNIT-I

Introduction: Knowledge in Speech and Language processing, Ambiguity, Models and algorithms, Language, Thought and understanding.

Regular Expressions, Text Normalization, Edit Distance: Regular Expressions, words, corpora, Text Normalization, Minimum Edit Distance.

N-gram Language Models: N-Grams, Smoothing.

Naïve Bayes and Sentiment classification: Naive Bayes classifiers, Training the Naive Bayes Classifier, Worked example, Optimizing for Sentiment Analysis.

UNIT-II:

Part-of-Speech Tagging: English word classes, The Penn Treebank Part-of-Speech Tagset, HMM Part-of-Speech Tagging.

Constituency Parsing: Ambiguity, CKY parsing.

Statistical Parsing: Probabilistic Context-Free Grammars, Probabilistic CKY Parsing of PCFGs. **Dependency Parsing:** Dependency Relations, Dependency Formalisms, Dependency Treebanks, Transition-Based Dependency Parsing.

UNIT-III:

Vector Semantics and embeddings: Words and Vectors, Cosine for measuring similarity, TF-IDF: Weighing terms in the vector, Applications of the TF-IDF vector model.

Lexicons for Sentiment, Affect and Connotation: Defining Emotion, Available Sentiment and Affect Lexicons, Semi-supervised Induction of Affect Lexicons, Supervised Learning of Word Sentiment.

Information Extraction: Relation Extraction, Extracting Times.

UNIT-IV:

Semantic Role labeling: Semantic roles, Semantic role labeling.

Sequence Processing with Recurrent Networks: Recurrent neural networks, recurrent neural language models.

Machine translation: The Encoder-Decoder model, Encoder-Decoder with RNNs.

UNIT-V:

Dialogue Systems and Chatbots: Rule based and corpus based chatbots, The Dialogue-State Architecture.

Speech Recognition and Synthesis: The Automatic Speech Recognition Task, Feature Extraction for ASR: Log Mel Spectrum, Speech Recognition Architecture, Text-to-Speech systems.

Learning Resources:

1. Daniel Jurafsky & James H. Martin, "Speech and Language Processing", 3rd edition, Pearson Education.
2. James Allan, Natural Language Understanding, 2nd

edition(1995), Pearson Education
3. Charnaick, Eugene, Statistical Language Learning, MIT Press, 1993
4. Christopher D. Manning, Hinrich Schutze, Foundations of Statistical Natural Language Processing, (1999), The MIT Press.
5. Tanveer Siddiqui, US Tiwary, Natural Language Processing and Information Retrieval, (2008), Oxford University Press.

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

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

Department of Computer Science & Engineering
BLOCKCHAIN ARCHITECTURE
(Professional Elective-VI)

SYLLABUS FOR B.E. VIII-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code:**U18PE880CS**
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 fundamental design and architectural primitives of Blockchain. 2 Understand the applications of Blockchain in an enterprise.	1 Explain the basics of Blockchain architecture and its need in business application. 2 Explain the fundamentals of distributed compute model architecture to design a fault tolerant blockchain model. 3 Apply the cryptographic primitives in making the blockchain model robust. 4 Apply the blockchain architecture to practice crypto currency. 5 Illustrate real time applications using blockchain model.

UNIT-I: Introduction to Blockchain
What is Blockchain, Public Ledgers, Blockchain as public ledgers, Bitcoin, Blockchain 2.0, Smart Contracts, Block in a Blockchain, Transactions, Distributed Consensus, The Chain and the Longest Chain, Cryptocurrency to Blockchain 2.0, Permissioned Model of Blockchain

UNIT-II: Crypto Primitives
Cryptographic Hash Function, Properties of a hash function, Hash pointer and Merkle tree, Digital Signature, Public Key Cryptography, A basic cryptocurrency.
Bitcoin: Creation of coins, Payments and double spending, FORTH – the precursor for Bitcoin scripting, Bitcoin Scripts, Bitcoin P2P Network, Transaction in Bitcoin Network, Block Mining, Block propagation and block relay.

UNIT-III: Consensus

Why Consensus, Distributed consensus in open environments, Consensus in a Bitcoin network, Proof of Work (PoW), HashcashPoW, Bitcoin PoW, Attacks on PoW and the monopoly problem, Proof of Stake (POS), Proof of Burn (POB), Proof of Elapsed Time, The life of a Bitcoin Miner, Mining Difficulty, Mining Pool

UNIT-IV: Permissioned Blockchain:

Permissioned model and use cases, Design issues for Permissioned blockchains, Execute contracts, State machine replication, Consensus models for permissioned blockchain, Distributed consensus in closed environment, Paxos, RAFT Consensus

UNIT-V: Blockchain for Enterprise:

Concepts and benefits of blockchain for enterprise, Actors, Components, Ledger, Events in a Blockchain, Security properties, Security considerations for Blockchain, Blockchain Crypto Service Providers, Limitations of Blockchain

Case Studies: Ethereum, Blockchain in Government

Learning Resources:

1. Andreas M. Antonopoulos, Mastering Bitcoin, O'Reilly, 2014
2. Melanie Swa, Blockchain: Blueprint for a new Economy, O'Reilly, 2015
3. William Mougayar, The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology, Wiley, 2016
4. George Coulouris, Distributed Systems Concept and Design, 5th edition, Pearson, 2012
5. Daniel Drescher, Blockchain: A non-technical introduction in 25 steps, APress, 2017
6. Henrick Diedrich,Ethereum: Blockchains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations, Wildfire Pub, 2016
7. https://github.com/rddill-IBM/ZeroToBlockchain

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

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

Duration of Internal Tests : 1 Hour 30 Minutes

With effect from the Academic Year 2021-22

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

Department of Computer Science & Engineering
PROJECT/ INTERNSHIP

SYLLABUS FOR B.E. VIII-SEMESTER

L:T:P (Hrs./week): 0:0:12	SEE Marks : 50	Course Code: **U18PW819CS**
Credits : 6	CIE Marks : 50	Duration of SEE : Viva-Voce

COURSE OBJECTIVES	**COURSE OUTCOMES** *On completion of the course, students will be able to*
1. To enhance practical and professional skills.	1. Demonstrate the ability to synthesize and apply the knowledge and skills acquired in the academic program to real-world problems
2. To familiarize tools and techniques of systematic Literature survey and documentation	2. Evaluate different solutions based on economic and technical feasibility
3. To expose the students to industry practices and team work.	3. Effectively plan a project and confidently perform all aspects of project management
4. To encourage students to work with innovative and entrepreneurial ideas	4. Demonstrate effective written and oral communication skills

The aim of Project is to implement and evaluate the proposal made as part of Project Seminar. Students can also be encouraged to do full time internship as part of project.

Project coordinator will coordinate the following:

Grouping of students (maximum of 2 to 3 in a group)
Allotment of projects and project guides
Project monitoring at regular intervals

The students placed in internships need to write the new proposal in consultation with industry coordinator and internal project guide within two weeks from the commencement of instruction.

All projects (internship and departmental) will be monitored twice in a semester through student presentation for the award of sessional marks. Sessional marks are awarded by a monitoring committee comprising of faculty members as well the supervisor. The first review of projects for 25 marks is conducted after completion of five weeks. The second review for another 25 marks is conducted after 14 weeks of instruction.

The students are required to submit copies of their project report following IEEE standards one week before the last instruction date.