M.L.Dahanukar College of Commerce

Teaching Plan: 2024 - 25

Department: I.T.   **Class: M.Sc.(I.T.) Part-II**   **Semester: IV**

Subject: Blockchain

Name of the Faculty: Mr. Chayan Bhattacharjee

Month	Topics to be Covered	Internal Assessment	Number of Lectures
February	**Unit 1: Blockchain:** Introduction, History, Centralised versus Decentralised systems, Layers of blockchain, Importance of blockchain, Blockchain uses and use cases.		08
March	**Working of Blockchain:** Blockchain foundation, Cryptography, Game Theory, Computer Science Engineering, Properties of blockchain solutions, blockchain transactions, distributed consensus mechanisms, Blockchain mechanisms, Scaling blockchain **Working of Bitcoin:** Money, Bitcoin, Bitcoin blockchain, bitcoin network, bitcoin scripts, Full Nodes and SVPs, Bitcoin wallets. **Unit 2: Ethereum:** three parts of blockchain, Ether as currency and commodity, Building trustless systems, Smart contracts, Ethereum Virtual Machine, The Mist browser, Wallets as a Computing Metaphor, The Bank Teller Metaphor, Breaking with Banking History, How Encryption Leads to Trust, System Requirements, Using Parity with Geth, Anonymity in Cryptocurrency, Central Bank Network, Virtual Machines, EVM Applications, State Machines, Guts of the EVM, Blocks, Mining's Place in the State Transition Function, Renting Time on the EVM, Gas, Working with Gas, Accounts, Transactions, and Messages, Transactions and Messages, Estimating Gas Fees for Operations, Opcodes in the EVM. **Solidity Programming:** Introduction, Global Banking Made Real, Complementary Currency, Programming the EVM, Design Rationale, Importance of Formal Proofs, Automated Proofs, Testing, Formatting Solidity Files,		12
April	**Unit 2 (cont.): Solidity Programming:** Reading Code, Statements and Expressions in Solidity, Value Types, Global Special Variables, Units, and Functions. **Unit 3: Hyperledger:** Overview, Fabric, composer, installing hyperledger fabric and composer, deploying, running the network, error troubleshooting. **Smart Contracts and Tokens:** EVM as Back End, Assets Backed by Anything, Cryptocurrency Is a Measure of Time, Function of Collectibles in Human Systems, Platforms for High-Value Digital Collectibles, Tokens as Category of Smart Contract, Creating a Token, Deploying the Contract, Playing with Contracts. **Unit IV: Mining Ether:** Why? Ether's Source, Defining Mining, Difficulty, Self-Regulation, and the Race for Profit, How Proof of		20

	Work Helps Regulate Block Time, DAG and Nonce, Faster Blocks, Stale Blocks, Difficulties,		
May	**Unit IV (cont.): Mining Ether:** Ancestry of Blocks and Transactions, Ethereum and Bitcoin, Forking, Mining, Geth on Windows, Executing Commands in the EVM via the Geth Console, Launching Geth with Flags, Mining on the Testnet, GPU Mining Rigs, Mining on a Pool with Multiple GPUs. Cryptoecnomics: Introduction, Usefulness of cryptoeconomics, Speed of blocks, Ether Issuance scheme, Common Attack Scenarios. **Unit V: Blockchain Application Development:** Decentralized Applications, Blockchain Application Development, Interacting with the Bitcoin Blockchain, Interacting Programmatically with Ethereum—Sending Transactions, Creating a Smart Contract, Executing Smart Contract Functions, Public vs. Private Blockchains, Decentralized Application Architecture **Building an Ethereum DApp:** The DApp, Setting Up a Private Ethereum Network, Creating the Smart Contract, Deploying the Smart Contract, Client Application **DApp deployment:** Seven Ways to Think About Smart Contracts, Dapp Contract Data Models, EVM back-end and front-end communication. **Unit V (cont**.): **DApp deployment:** JSON-RPC, Web 3, JavaScript API, Using Meteor with the EVM, Executing Contracts in the Console, Recommendations for Prototyping, Third-Party Deployment Libraries, **Creating Private Chains.**		20

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M.L. Dahanukar College of Commerce

Teaching Plan: 2024 - 25

Department: I.T.   **Class: M.Sc.(I.T.)**   **Semester: IV**

Subject: Deep Learning

Name of the Faculty: Hina Mahmood

Month	Topics to be Covered	Internal Assessment	Number of Lectures
February	**Applied Math and Machine Learning Basics:** Linear Algebra: Scalars, Vectors, Matrices and Tensors, Multiplying Matrices and Vectors , Identity and Inverse Matrices, Linear Dependence and Span , norms, special matrices and vectors, Eigen Decompositions. **Numerical Computation:** Overflow and under flow, poor conditioning, Gradient Based Optimization, Constraint optimization.	Done	18
March	**Deep Networks:** Deep feed forward network, regularization for deep learning, Optimization for Training deep models. **Convolution Applications:** Convolutional Networks, Sequence Modelling, Applications **Deep Learning Research:** Linear Factor Models, Auto encoders, representation learning		20
April	**Generative Models:** Approximate Inference, Deep Generative Models **b) Diff usion Models (Reference 3) c) Applications:** Transformers, Advance GANs **(Reference 3)**		22

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ML Dahanukar College

Teaching Plan: 2024 - 2025

Department: I.T.   **Class: M.Sc.(I.T.) Part II**   **Semester: IV**

Subject: Robotic Process Automation

Name of the Faculty: Pooja Amin

Month	Topics to be Covered	Internal Assessment	Number of Lectures
February	**RPA Basics:** Sequences and Flowcharts: a. Create a simple sequence-based project. b. Create a flowchart-based project. c. Automate UiPath Number Calculation (Subtraction, Multiplication, Division of numbers). d. Create an automation UiPath project using different types of variables (number, datetime, Boolean, generic, array, data table) **Decision making and looping:** a. Consider an array of names. We have to find out how many of them start with the letter "a". Create an automation where the number of names starting with "a" is counted and the result is displayed. b. Demonstrate switch statements with an example. c. Create an automation To Print numbers from 1 to 10 with break after the writeline activity inside for each activity d. Create an automation using Do..While Activity to print numbers from 5 to 1 e. Create an automation using Delay Activity between two writeline activities to separate their execution by 5 seconds f. Create an automation to demonstrate use of decision statements (if) **Types of Recording:** a. Basic Recording using Toolbar b. Basic Recording using Notepad		16

March	b. Basic Recording using Notepad c. Desktop Recording using Tool bar d. Desktop Recording by creating a workflow e. Web Recording e.g. Find the rating of the movie from imdb web site f. Web Recording manually **Excel Automation:** a. Automate the process to extract data from an excel file into a data table and vice versa b. Create an automation to Write data to specific cell of an excel sheet. c. Create an automation to Read data to specific cell of an excel sheet. d. Create an automation to append data to specific cell of an excel sheet. e. Create an automation to sort a table of an excel sheet. f. Create an automation to filter a table of an excel sheet g. Choose a repetitive manual task from your workplace or daily life. Design and implement an RPA bot to automate this task using your preferred RPA tool **Different controls in UiPath:** a. Implement the attach window activity. b. Automate using Anchor Base. c. Automate using Element Exists. d. Automate using Find Children control. e. Use Get Ancestor control f. Use Find Relative control **Keyboard and Mouse Events:** a. Demonstrate the following activities in UiPath: i. Mouse (click, double click and hover) ii. Type into iii. Type Secure text b. Demonstrate the following events in UiPath: . Element triggering event i. Image triggering event ii. System Triggering Event c. Automate the process of launching an assistant bot on a keyboard event.		16
April	**Screen Scraping and Web Scraping methods:** a. Automate the following screen scraping methods using UiPath: a. Full Text b. Native c. OCR b. Demonstrate Data Scraping and display values in Message box.		16

	c. Demonstrate Screen Scraping for a pdf, web page and image file. **PDF Automation and Exception Handling** a. Read PDF With OCR b. Merge PDF's into one c. Get PDF Total Page count Using Regex d. Extract data from a PDF or Excel file and populate it into a database or spreadsheet. e. Extract data from a PDF or Excel file and populate it into a database or spreadsheet. Implement data manipulation techniques like filtering, sorting, or data validation. f. Demonstrate Exception Handling using UiPath		
May	**Email Automation** a. Configure Email using UiPath b. Read Emails c. Send Email with Attachment d. Save Email Attachments e. Reply to Email **Orchestrator management and mini project** a. Deploy bots to Orchestrator b. Run jobs from Orchestrator c. Queue Introduction: i. Add items to Queue. ii. Get Queue item from Orchestrator d. Build UiPath Chatbot using Google dialogflow **RPA Applications**		08

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