UE18CS 324 – BLOCKCHAIN (4:0:0:0:4)

# of Hours: 56

Class #	Chapter Title / Reference Literature	Topics to be Covered		% of Portion covered
			% of Syllabus	Cumulative %
1.	Unit#1/ 1.1	Blockchain Introduction	17.8	17.8
2.		Key Blockchain Concepts: Peer to Peer Network		
3.		Nodes		
4.		Cryptocurrency		
5.		Tokens		
6.		Public Ledger		
7.		Types of blockchain		
8.		Permissioned blockchain model		
9.		Permission-less blockchain model		
10.		Laboratory-1		
11.	Unit#2/.1,2.2, 2.3,2.4,5.1	Cryptography 1: Machines that encrypted data in the past	21.4	39.2
12.		Cryptography 2: Modern Cryptography		
13.		Digital Signature		
14.		Hash functions 1		
15.		Hash functions 2		
16.		Hash Pointer, Markle tree		
17.		Ledgers, Transactions and trade, public witness, Computers that witness		
18.		Distributed Consensus		
19.		Smart contract design		
20.		Bitcoin Blockchain Network		
21.				
22.		Laboratory-2		
23.	Unit #3/3.1,3.2,3.3, 3.4,3.5,3.6,3.7	Proof of Work	21.4	60.6
24.		Proof of Stake		
25.		Delegated Proof of Stake		
26.		Proof of Authority		
27.		Proof of Elapsed Time		
28.		Proof of Capacity, Proof of Burn		
29.		Proof of Space		
30.		RAFT		
31.		PAXOS		
32.		Byzantine Fault Tolerance System		

33.		PBFT		
34.		Laboratory-3		
35.	**Unit#4 / 5.1,5.2,5.3,5.4 (T1) 4.1,4.2,4.3,4.4 ,4.5,4.6(R1)**	Smart contracts: origins and how they function	21.4	82
36.		Creating and deploying smart contracts		
37.		Second generation tokens Decentralized applications		
38.		How are DApps constructed?		
39.		Decentralized Autonomous Organizations (DAOs)		
40.		Blockchain-as-a-service (BaaS),		
41.		Hyperledger fabric model 1		
42.		Architecture		
43.		Core components		
44.		Hyperledger Model		
45.		Bitcoin Versus Ethereum versus Hyperledger		
46.		Laboratory-4		
47.	**Unit #5/5.1,5.2,5.3, 5.4,9.1(R1)**	Blockchain vulnerabilities	17.8	100
48.		Smart contract vulnerabilities		
49.		Blockchain on CIA security triad: Confidentiality		
50.		Blockchain on CIA security triad: Integrity		
51.		Blockchain on CIA security triad: Availability		
52.		Blockchain based DNS security platform		
53.		Blockchain based DNS security platform		
54.		Deploying blockchain based DDOS protection		
55.		Deploying blockchain based DDOS protection		
56.		Deploying blockchain based DDOS protection		

Literature

Book Type	Code	Title & Author	Publication Information		
			Edition	Publisher	Year
Textbook	T	Introduction to Blockchain Technology by Tiana Laurence	1	Van Haren Publishing	2019
Reference Book	R1	Hands-On Cybersecurity with Blockchain: Implement DDoS protection, PKI-based identity, 2FA, and	1	Packt Publishing	2018

		DNS security using Blockchain by Rajneesh Gupta			
	R2	Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction" by Narayanan, Bonneau, Felten, Miller and Goldfeder,	-	Princeton Universi	2016