



Department of Information Technology	LP: IT18016 Rev. No: 00
B.E/B.Tech/M.E/M.Tech : Information Technology Regulation: R2018 PG Specialisation : _____ Sub. Code / Sub. Name : IT18016 Blockchain for Business Unit : I	Date: 28/02/22

Unit Syllabus: Introduction to Blockchain – Centralized Vs. Decentralized Systems – Layers of Blockchain – Need for Blockchain – Blockchain uses and Use Cases - Blockchain foundation – Cryptography – Game Theory – Merkle Trees – Properties of Blockchain solutions – Blockchain Transactions – Distributed Consensus Mechanisms – Blockchain Applications – Scaling Blockchain

Objective:

To understand what Blockchain is and its importance.

To understand the various layers of blockchain

To understand components of blockchain

Session No *	Topics to be covered	Ref	Teaching Aids
1	Backstory of blockchain, Introduction, Case study - Stock trading , Datastructure	1- Ch-1 pp:1-29	PPT
2	Centralised vs decentralized – Limitations of centralized system	1- Ch-1 pp:1-29	PPT
3	Layers of blockchain	1- Ch-1 pp:1-29	PPT
4	Blockchain adoption, Blockchain uses and usecases	1- Ch-1 pp:1-29	PPT
5	Laying the blockchain foundation	1- Ch-2 pp:31-147	PPT
6	Cryptography – Symmetry key, DES, AES	1- Ch-2 pp:31-147	PPT
7	Hash Function, Applications, Coding examples	1- Ch-2 pp:31-147	PPT
8	Game theory-Prisoners dilemma, Nash equilibrium, Byzantine general problem, zero sum games,	6- Ch-1 pp:1-8	PPT
9	Merle Trees, Properties of blockchain, blockchain transaction	1- Ch-2 pp:31-147	PPT

Content beyond syllabus covered (if any):

* Session duration: 50 minutes



Sub. Code / Sub. Name: IT18016 Blockchain for Business

Unit : II

Unit Syllabus : History of Money – Dawn of Bitcoin – The Bitcoin Blockchain – The Bitcoin Network – Bitcoin Scripts – Full Nodes vs SPVs – Bitcoin Wallets

Objective:

- To understand components of blockchain
- To understand the working mechanism of Bitcoin

Session No *	Topics to be covered	Ref	Teaching Aids
10	History of Money - Primitive barter system, Banking era	1- Ch-3 pp:149-215	PPT
11	Dawn of Bitcoin – Working principle of bitcoin	1- Ch-3 pp:149-215	PPT
12	The Bitcoin Blockchain – block structure, genesis block	1- Ch-3 pp:149-215	PPT
13	The Bitcoin Network – network discovery, bitcoin transaction	1- Ch-3 pp:149-215	PPT
14	Consensus and block mining, block propagation	1- Ch-3 pp:149-215	PPT
15	Bitcoin Scripts – script based implementation	1- Ch-3 pp:149-215	PPT
16	Full Nodes vs SPVs	1- Ch-3 pp:149-215	PPT
17	Bitcoin Wallets – Wallet application	1- Ch-3 pp:149-215	PPT/Demo
18	CAT I		

Content beyond syllabus covered (if any):

* Session duration: 50 mins



Sub. Code / Sub. Name: IT18016 Blockchain for Business

Unit : III

Unit Syllabus : From Bitcoin to Ethereum – Ethereum Blockchain – Merkle Patricia Tree – RLP Encoding – Ethereum Transaction and Message Structure – State Transaction Function – Gas and Transaction Cost – Smart Contracts – Ethereum Virtual Machine – Ethereum Ecosystem : Swarm – Whisper – DApp – Development Components.

Objective:

- To know how ethereum helps in creating business blockchain

Session No *	Topics to be covered	Ref	Teaching Aids
19	From Bitcoin to Ethereum	1- Ch-4 pp:219-265	PPT
20	Ethereum Blockchain	1- Ch-4 pp:219-265	PPT
21	Merkle Patricia Tree - RLP Encoding	1- Ch-4 pp:219-265	PPT
22	Ethereum Transaction and Message Structure - State Transaction Function	1- Ch-4 pp:219-265	PPT
23	Gas and Transaction Cost	1- Ch-4 pp:219-265	PPT
24	Smart Contracts	1- Ch-4 pp:219-265	PPT
25	Ethereum Virtual Machine	1- Ch-4 pp:219-265	PPT
26	Ethereum Ecosystem : Swarm – Whisper – DApp	1- Ch-4 pp:219-265	PPT/Demo
27	DApp – Development Components.	1- Ch-4 pp:219-265	PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 mins



Sub. Code / Sub. Name: IT18016 Blockchain for Business

Unit : IV

Unit Syllabus : Blockchain Vs Distributed Databases, Viewing blockchain in an an enterprise, Types of blockchain technology, Blockchain for business – Business benefits of blockchain, Example use cases, Challenges in enterprise adoption, Hyperledger, Corda, Example Enterprise Applications.

Objective:

- To gain knowledge about enterprise blockchain

Session No *	Topics to be covered	Ref	Teaching Aids
28	Blockchain Vs Distributed Databases, Viewing blockchain in an an enterprise	2- Ch-3 pp:149-215	PPT
29	Types of blockchain technology	2- Ch-3 pp:149-215	PPT
30	Blockchain for business – Business benefits of blockchain	2- Ch-3 pp:149-215	PPT
31	Example use cases, Challenges in enterprise adoption	2- Ch-3 pp:149-215	PPT
32	Hyperledger	5- Ch-9 pp:645-692	PPT/Demo
33	Corda	5- Ch-9 pp:645-692	PPT/Demo
34	Example Enterprise Applications	3- Ch-7 pp:269-302	PPT/Demo
35	Summary		
36	CAT II		

Content beyond syllabus covered (if any):

* Session duration: 50 mins



Sub. Code / Sub. Name: IT18016 Blockchain for Business

Unit : V

Unit Syllabus : DApp – Setting up a Private Ethereum Network: Install go-ethereum – Create geth Data directory – Create a geth account – create genesis.json configuration File – Run the first Node of the Private Network – Run the second node of the Network – Creating Smart Contract –Deploying the Smart Contract – Client Application

Objective:

- To build an ethereumDApp

Session No *	Topics to be covered	Ref	Teaching Aids
37	Intoduction to DApp	1- Ch-6 pp:319-375	PPT/Demo
38	DApp – Setting up a Private Ethereum Network: Install go-ethereum – Create geth Data directory – Create a geth account – create genesis.json configuration File – Run the first Node of the Private Network- Run the second node of the Network	1- Ch-6 pp:319-375	PPT/Demo
39		1- Ch-6 pp:319-375	PPT/Demo
40		1- Ch-6 pp:319-375	PPT/Demo
41	Creating Smart Contract –Deploying the Smart Contract – Client Application	1- Ch-6 pp:319-375	PPT/Demo
42		1- Ch-6 pp:319-375	PPT/Demo
43		1- Ch-6 pp:319-375	PPT/Demo
44	Summary		
45	CAT III		

Content beyond syllabus covered (if any):



* Session duration: 50 mins



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REFERENCES:

1. Beginning Blockchain – A Beginner’s Guide to Building Blockchain Solutions, Authors :Bikramaditya Singhal, Gautam Dhameja and Priyansu Sekhar Panda, Apress Publication
2. Blockchain for the Enterprise: The definitive guide to adoption of blockchain in the enterprise, Author &Publisher : Manav Gupta, ISBN-10: 1999387104 2.
3. The Truth Machine – The Blockchain and the Future of Everything, Authors: Michael J. Casey and Paul Vigna, St.Martin’s Press
4. Mastering Bitcoin – Programming the Open Blockchain, Author: Andreas M. Antonopoulos, O’Reilly Publication
5. Imran Bashir, “Mastering Blockchain”, Packt Publishing 2017.
6. Melanie Swan, “Blockchain - Blueprint for a New Economy”, O’Reilly Media, 2015

	Prepared by	Approved by
Signature		
Name	Dr.N.Devi	Dr. V. Vidhya
Designation	AP/IT	HoD/INT
Date	28/02/22	28/02/22
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD