



Syllabus

Blockchain and its Applications

Duration: 30 hours

Module 1: Introduction to Blockchain-What is Blockchain, Traditional way to sharing /files. Centralized and Decentralized Network, Problems with the centralized network, Public Ledger, Merkle Hash Tree, Bitcoin, Bitcoin Transaction Life Cycle, Smart Contract, Blockchain Architecture, Transaction in a block.

Basic Crypto Primitives- Cryptography, Public and Private Key, SHA Algorithm, Digital Signature

Bit coin Basics- Crypto currency, Double spending

Module 2: Distributed Consensus-Why consensus, Proof of Work, Proof of Stake , Proof of Burn.

Types of Block chain - Permissioned, Permission less, and Hybrid, Byzantine General Problem in Permission Block chain

Module 3: Blockchain Components and Concepts, Hyperledger – Introduction, Distributed Ledger Technology, Interaction of application with Ledger

Blockchain Applications- SCM, Government (Tax payment & Land Registry Record), Health, Education

Reference Books:

1. Mastering Bitcoin: Unlocking Digital Cryptocurrencies, by Andreas Antonopoulos
2. Blockchain by Melanie Swa, O'Reilly
3. Hyperledger Fabric - <https://www.hyperledger.org/projects/fabric>
4. Zero to Blockchain - An IBM Redbooks course, by Bob Dill, David Smits - <https://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/crse0401.html>



Schedule

Duration: 30 hours			
Session	Content	Time	Date
1.	Introduction to Blockchain-What is Blockchain	03:00-4:00	18/08/2021
2.	Traditional way to sharing files	03:00-4:00	19/08/2021
3.	Centralized and Decentralized Network	03:00-4:00	25/08/2021
4.	Advantages and Problems with the centralized network	03:00-4:00	26/08/2021
5.	Public or Private Ledger	03:00-4:00	1/09/2021
6.	Merkley Hash Tree, Hashing Technique	03:00-4:00	2/09/2021
7.	Demonstration of Hashing Technique (online)	03:00-4:00	8/09/2021
8.	Bitcoin, Bitcoin Transaction Life Cycle	03:00-4:00	9/09/2021
9.	Smart Contract and its uses	03:00-4:00	15/09/2021
10.	Blockchain Architecture	03:00-4:00	16/09/2021
11.	Transaction in a Blockchain	03:00-4:00	22/09/2021
12.	Basic Crypto Primitives- Cryptography	03:00-4:00	23/09/2021
13.	Encryption and Decryption, Public and Private Key	03:00-4:00	6/10/2021
14.	SHA Algorithm	03:00-4:00	7/10/2021
15.	Digital Signature and its importance	03:00-4:00	20/10/2021
16.	Bitcoin Basics- Cryptocurrency	03:00-4:00	21/10/2021
17.	Forking in Blockchain	03:00-4:00	27/10/2021
18.	What is Double spending and Blockchain is helpful to check Double Spending	03:00-4:00	28/10/2021
19.	Revision of Module 1	03:00-4:00	3/11/2021



20.	Distribute Consensus-Why consensus	03:00-4:00	11/11/2021
21.	Proof of Work, Proof of Stake, Proof of Burn	03:00-4:00	17/11/2021
22.	Types of Blockchain- Permissioned, Permissionless, and Hybrid	03:00-4:00	18/11/2021
23.	Byzantine General Problem in Permissioned Blockchain	03:00-4:00	24/11/2021
24.	Revision of Module 2	03:00-4:00	25/11/2021
25.	Blockchain Components and Concepts	03:00-4:00	1/12/2021
26.	Hyperledger – Introduction, Distributed Ledger Technology	03:00-4:00	2/12/2021
27.	Interaction of application with Ledger	03:00-4:00	8/12/2021
28.	Blockchain Applications- SCM	03:00-4:00	9/12/2021
29.	Government (Tax payment & Land Registry Record), Health, Education	03:00-4:00	15/12/2021
30.	Revision of Module 3	03:00-4:00	16/12/2021



	REPORT
Name of Activity	Blockchain and its Applications
Date	18 th August 2021 to 16 th December 2021
Venue	Class Room
Organized by	Computer Applications Department
Resource Person	Mr. Himanshu Rastogi ,Assistant Professor, MIMT
Beneficiaries	BCA V Semester (Students)
Coordinator	Mr. Suraj Shukla , Assistant Professor, MIMT
Objective	<ul style="list-style-type: none">• You will understand Blockchain Technology from the basics platform and will learn how to use block-chain digital databases to be distributed and how it is capable of working like a distributed network.• You will know what the Distributed Ledgers are in Blockchain and they will know how various transactions are updated by the Distributed Ledgers and updated from time to time.• You will learn how Blockchain technology is connected to our society and how you all are going to be dependent on blockchain technology in the coming days.
Content	<p>With the initiative of IQAC, Mangalmai Institute of Management and Technology organized a add on certification course on “Blockchain and its Application”.</p> <p>Day1: The session started with the introduction to Blockchain.</p> <p>Day 2: In this session, The traditional way to sharing files.</p> <p>Day 3: In this interactive session, the resource person introducecentralized and Decentralized network.</p> <p>Day 4: The resource persons started the session with the advantages and Problems with the centralized network.</p> <p>Day 5: In this session, the student came to know about about the public and private ledger.</p>



	<p>Day 6: Merkle Hash Tree, Hashing technique was discussed..</p> <p>Day 7: This session was focused on Hashing Technique.</p> <p>Day 8: In this session, the resource persons discussed the bitcoin, Bitcoin Transaction Life Cycle.</p> <p>Day 9: Smart Contract and its uses was discussed.</p> <p>Day 10: The session was on the Blockchain Architecture.</p> <p>Day 11: Transaction in a Blockchain was discussed.</p> <p>Day 12: The resource persons discussed with students about the basics of Crypto Primitives-Cryptography.</p> <p>Day 13: In this session the student learnt Encryption and Decryption, Public and Private keys.</p> <p>Day 14: In this session, SHA algorithm was introduced.</p> <p>Day 15: Resource person discussed the digital signature and its importance.</p> <p>Day 16: Bitcoin Basics-Cryptography was taught in the classroom.</p> <p>Day 17: In this session, Students learnt Forking in Blockchain.</p> <p>Day 18: In this session, the resource person discuss the basics of double spending and Blockchain is helpful to check Double Spending.</p> <p>Day 19: Revision of module 1.</p> <p>Day 20: In this session, Distributed Consensus was taught.</p> <p>Day 21: The session was on the Proof of Work, Proof of Stake, Proof of Burn.</p> <p>Day 22: This session was on the types of Blockchain-Permissioned, Permissionless and Hybrid</p> <p>Day 23: In this session, the Byzantine General Problem in Permissioned Blockchain was taught.</p> <p>Day 24: Revision of module 2.</p>
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	<p>Day 25: This session was about the Blockchain Components and Concepts.</p> <p>Day 26: Hyperledger introduction, distributed ledger technology was taught.</p> <p>Day 27: Interaction of application with ledger was introduced.</p> <p>Day 28: The discussion was on the application of Blockchain i.e. SCM.</p> <p>Day 29: Introduction about Government (Tax payment and Land Registry Record)</p> <p>Day 30: Revision of module 3.</p>
Outcome of Activity	<p>Student will be able to understand :</p> <ul style="list-style-type: none">• The basic concepts of Computer Network, Computer Network Security, and Data Structure.• Also Students will be able to understand the concept of Block chain and he will be able to understand the importance of the Block chain in various domain.



List of Beneficiary

BCA- V Sem

Sr. No.	Roll No.	Student Name
1	R190992106006	ARTI SINHA
2	R190992106007	ASHUTOSH KUMAR
3	R190992106008	ASHWIN KUMAR SINGH
4	R190992106012	DEV RISHI
5	R190992106023	KARAN
6	R190992106024	KARTIKE KUMAR
7	R190992106029	LALIT CHAUHAN
8	R190992106034	MOHD ISRAR
9	R190992106037	MUKESH SINGH
10	R190992106046	RAMAVTAR
11	R190992106054	SHANI RAI
12	R190992106061	SUBHAM
13	R190992106066	VAQUAAR



Resource Person Profile

Name : Mr. Himanshu Rastogi, Assistant Professor

Core Skills: C, C++, Advance Excel, Web Development

Qualification: MCA, M.Tech (CS), M.Phil (CS), PhD(P)

Experience: 22.5 years

Research Area: Digital Watermarking, Blockchain



Certificate Template

