Mangalmay Institute of Management Technology
Greater Noida (U.P.)

MANGALMAY
INSTITUTE OF MANAGEMENT TECHNOLOGY

CERTIFICATION PROGRAMME

On

Blockchain and its Applications

From

13th September - 20th December 2022

Convener: Mr. Abhay N Tripathi, Associate Professor, MIMT

For BCA Vth Semester

Resource Person

Dr. Himanshu Rastogi
Associate Professor, MIMT

Syllabus

Blockchain and its Applications

Duration: 36 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, Merkley 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: Distribute 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 PermissionBlock 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: 36 hours			
Session	**Content**	**Time**	**Date**
1.	Introduction to Blockchain-Traditional way to sharing filesand What is Blockchain	03:00-4:30	13/09/2022
2.	Centralized and Decentralized Network and Advantages and Problems with the centralized network	03:00-4:30	19/09/2022
3.	Public or Private Ledger, Merkley Hash Tree	03:00-4:30	20/09/2022
4.	Hashing Technique, Demonstration of Hashing Technique (online)	12:00-1:30	22/09/2022
5.	Bitcoin, Bitcoin Transaction Life Cycle	03:00-4:30	27/09/2022
6.	Smart Contract and its uses	03:00-4:30	10/10/2022
7.	Blockchain Architecture, Transaction in a Blockchain	03:00-4:30	11/10/2022
8.	Basic Crypto Primitives- Cryptography, Encryption and Decryption	03:00-4:30	17/10/2022
9.	Public and Private Key, SHA Algorithm	03:00-4:30	18/10/2022
10.	Digital Signature and its importance	03:00-4:30	31/10/2022
11.	Bitcoin Basics- Cryptocurrency	03:00-4:30	01/11/2022
12.	Forking in Blockchain	03:00-4:30	07/11/2022
13.	What is Double spending and how Blockchain is helpful to check Double Spending?	03:00-4:30	08/11/2022
14.	Revision of Module 1	03:00-4:30	14/11/2022
15.	Distributed Consensus-Why consensus	03:00-4:30	21/11/2022
16.	Proof of Work, Proof of Stake, Proof of Burn	03:00-4:30	22/11/2022
17.	Types of Blockchain- Permissioned, Permissionless,	03:00-4:30	28/11/2022

	and Hybrid		
18.	Byzantine General Problem in Permissioned Blockchain	03:00-4:30	29/11/2022
19.	Revision of Module 2	03:00-4:30	05/12/2022
20.	Blockchain Components and Concepts	03:00-4:30	06/12/2022
21.	Hyperledger – Introduction, Distributed Ledger Technology,Interaction of application with Ledger	03:00-4:30	12/12/2022
22.	Blockchain Applications- SCM	03:00-4:30	13/12/2022
23.	Government (Tax payment & Land Registry Record), Health, Education	03:00-4:30	19/12/2022
24.	Revision of Module 3	03:00-4:30	20/12/2022

	REPORT
Name of Activity	Blockchain and its Applications
Date	13th September 2022 to 20th December 2022
Venue	Class Room
Organized by	Computer Applications Department
Resource Person	Dr. HimanshuRastogi, Associate Professor, MIMT
Beneficiaries	BCA Students (35 Students)
Convener	Mr. Abhay N Tripathi , Associate Professor , MIMT
Objective	• Student 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. • Studentwill 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. • Studentwill 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	With the initiative of IQAC, Mangalmay Institute of Management and Technology organized Add on Certification Course on "Blockchain and its Application". Day1: The session started with the discussion about the traditional way to sharing files remotely and their disadvantages. Introduction to Blockchain technology was also discussed. Day 2: In this session, the concept of Centralized and Decentralized Networkwith their advantages was discussed and problems with the centralized network are also pointed out. Day 3: In this session, the student came to know about the public and private ledger with their advantages and disadvantages. To maintain the linkage between nodes in a blockchain network, Merkley Hash Tree was discussed. Day 4: This session was focused on Hashing Technique trough online demonstration. Day 5: In this session, the resource persons discussed about the Bitcoin, Bitcoin Transaction Life Cycle. Day 6: Concept of contract and Smart Contract with its uses was discussed. Day 7: The session was based on the Blockchain Architecture and

	Transaction in a Blockchain. Day 8: The resource persons discussed with students about the basics of Crypto Primitives-Cryptography, Encryption and Decryption. Day 9: In this session, Public and Private keysand SHA algorithm was introduced. Day 10: Resource person discussed the digital signature and its importance. Day11: Bitcoin Basics-Cryptography was taught in the classroom. Day 12: In this session, Students learnt Forking in Blockchain. Day 13: In this session, the resource person discussed about the basics of double spending and Blockchain is helpful to check Double Spending. Day 14: Revision of module 1. Day 15: In this session, Distributed Consensus was taught. Day 16: The session was based on the Proof of Work, Proof of Stake, and Proof of Burn. Day 17: This session was based on the types of Blockchain-Permissioned, Permissionless and Hybrid Day 18: Byzantine General Problem in Permissioned Blockchain was taught. Day 19: Revision of module 2. Day 20: This session was about the Blockchain Components and Concepts. Day 21: Introduction to Hyperledger, Distributed Ledger Technology and Interaction of application with ledger was discussed. Day 22: The discussion was done on the implementation of Blockchain in the field of SCM. Day 23:Implementation in Government (Tax payment and Land Registry Record), Health, Education was also discussed Day 24: Revision of module 3.
Outcome of Activity	Student will be able to understand : • The basic concepts of Computer Network, Computer Network Security, and Data Structure. • Also students will be able to understand the concept of Blockchain and he will be able to understand the importance of the Blockchain in various domain.

Mangalmay Institute of Management Technology
Greater Noida (U.P.)

Resource Person Profile

Name : Dr. HimanshuRastogi, Associate Professor

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

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

Experience: 23.5 years

Research Area: Digital Watermarking, Blockchain Technology

Figure 1 Dr. HimanshuRastogi during his session

Certificate Template:

MANGALMAY
INSTITUTE OF MANAGEMENT TECHNOLOGY
Gr. NOIDA

CERTIFICATE OF COURSE COMPLETION

This is to certified the **ABHISHEK SHUKLA** student of BCA **(Batch: 2020-23)** has successfully completed **36 Hours** course on **"Blockchain and its Applications"** from **13-September-2022** to **20-December-2022**

PRINCIPAL
Mangalmay Institute of
Management & Technology

CONVENER
Mangalmay Institute of
Management Technology

Mangalmay Institute of Management Technology
Greater Noida (U.P.)

Course: BCA

ADD-ON COURSE QUIZ

Course Name: Blockchain Technologies & its Application

Time: 30 Min

Date: 26/12/2022

Roll No: **Name:** Ajnan Rashid

Year/Sem: III/V

Invigilator's Sign:

Note: All questions are compulsory. Each question will carry '1' mark and there is no 'Negative Marking'

1) What is a blockchain?

a.) A blockchain is a centralized digital ledger consisting of records called blocks.

b.) A blockchain is a decentralized, distributed. digital ledger consisting of records called blocks.

c.) A blockchain is a digital database consisting of records called class.

d.) None of the above

2) P2P stand for _____.

a.) Private to Public

b.) Password to Private

c.) Peer to Peer

d.) None of the above

3) The term used for a blockchain splits is _____.

a.) A merger

b.) A fork

c.) A division

d.) None of the above

4) It is possible to program a blockchain to record transactions automatically. True/False.

a.) True

b.) False

5) _____ is used for storing bitcoins

a.) Block

b.) Wallet

c.) Both A and B

d.) None of the above

6) _____ is the type of ledger present in Blockchain.

a.) Distributed Ledger

b.) Decentralized Ledger

c.) Both A and B

d.) None of the above

7) In blockchain, a block is consist of _____.

a.) A Timestamp

b.) Transaction data

c.) A Hash point

d.) All of the above

8) Smart contracts are not the legal documents?

a.) Yes

b.) No

c.) May be

d.) Can't say

9) What is a miner?

a.) A type of blockchain

b.) An algorithm that predicts the next part of the chain

c.) A person doing calculations to verify a transaction

d.) Computers that validate and process blockchain transactions

10) What is the purpose of a nonce?

a.) Follows nouns

b.) A hash function

c.) Prevents double spending

d.) Sends information to the blockchain network

11) What is a genesis block?

a.) The first block of a Blockchain

b.) A famous block that hardcoded a hash of the Book of Genesis onto the blockchain

c.) The first block after each block halving

d.) The 2nd transaction of a Blockchain

12) True or False: Blockchain is the same as Bitcoin.

a.) True

b.) False

13) What is a Private Key?

a.) A key on your keychain

b.) A key given to the public

c.) A key not given to the public

d.) A key that opens the secret door

14) Who invented Merkle Tree?

a.) Ralph Merkle

b.) Rolph Wiggun

c.) Nick Szabo

d.) Vitalic Buterin

15) Who created Bitcoin?

a.) Satoshi Nakamoto

b.) Samsung

c.) John McAfee

d.) China

---------- **For Departmental use only** ----------

Max. Marks: 15 **Marks Obtained:** 12

Name of Evaluator: K. Himanshu Rastogi **Sign.**

Mangalmay Institute of Management Technology
Greater Noida (U.P.)

Course: BCA

ADD-ON COURSE QUIZ

Course Name: Blockchain Technologies & its Application

Time: 30 Min

Date: 26/12/2022

Year/Sem: III/V

Roll No: **Name:** Ankita Dutta

Invigilator's Sign:

Note: All questions are compulsory. Each question will carry '1' mark and there is no 'Negative Marking'

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Course: BCA

ADD-ON COURSE QUIZ

Course Name: Blockchain Technologies & its Application

Time: 30 Min

Date: 26/12/2022

Roll No: **Name:** Devendra Kumar

Year/Sem: III/V

Invigilator's Sign: _____

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a.) True

b.) False

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Name of Evaluator: Dr. Himanshu Rastogi

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Course: BCA

ADD-ON COURSE QUIZ

Course Name: Blockchain Technologies & its Application

Time: 30 Min

Date: 26/12/2022

Roll No: Name: Mohit Singh

Year/Sem: III/V

Invigilator's Sign:

Note: All questions are compulsory. Each question will carry '1' mark and there is no 'Negative Marking'

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b.) A blockchain is a decentralized, distributed, digital ledger consisting of records called blocks. (1)

c.) A blockchain is a digital database consisting of records called class.

d.) None of the above

2) P2P stand for _____.

a.) Private to Public

b.) Password to Private

c.) Peer to Peer (1)

d.) None of the above

3) The term used for a blockchain splits is _____.

a.) A merger

b.) A fork (1)

c.) A division

d.) None of the above

4) It is possible to program a blockchain to record transactions automatically. True/False.

a.) True (1)

b.) False

5) _____ is used for storing bitcoins

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b.) Wallet (1)

c.) Both A and B

d.) None of the above

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ADD-ON COURSE QUIZ
Course Name: Blockchain Technologies & its Application

Time: 30 Min
Date: 26/12/2022

Roll No: **Name:** Prerna Verma **Year/Sem:** III/V

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Max. Marks: 15 **Marks Obtained:** 13

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