Yashoda Shikshan Prasarak Mandal's
YASHODA TECHNICAL CAMPUS, SATARA
An Autonomous Institute
FACULTY OF ENGINEERING
YSPM Department of Artificial Intelligence and Data Science Engineering

Teaching Learning and Assessment Plan

Name of Faculty: Mr. Yajurv Fonia **Subject: Blockchain Technology (BTAIOE705B)**

Semester: VII **Class: B. Tech** **Academic Year: 2026-27** **Planned Duration: 27/08/26 to 12/11/26**

Course outcome: After completing the course students will able to

BTAIC703 _1	**Explain** the fundamental characteristics of blockchain using bitcoin.
BTAIC703 _2	**Demonstrate** the application of hashing and public key cryptography in protecting the blockchain.
BTAIC703 _3	**Explain** the elements of trust in a Blockchain: validation, verification, and consensus.
BTAIC703 _4	**Develop** smart contracts in Ethereum framework
BTAIC703 _5	**Integrate** and **automate** data pipelines across tools to streamline data workflows and promote collaboration.

Reference Books:

A. Bikramaditya Singhal, Gautam Dhameja, Priyansu Sekhar Panda, A Beginner's Guide to Building Blockchain Solutions, Apress, 2018.
B. Ritesh Modi, Solidity Programming Essentials-A Beginner's Guide to Build Smart Contractsfor Ethereum and Blockchain, 2018, Packt Publishing Ltd.
C. Melanie Swan, Blockchain: Blueprint for a New Economy, O'Reilly, 2015
D. William Stallings, Cryptography and Network Security, eighth edition, Pearson, 2020.

Unit	Lecture No.	Lesson Plan Content Delivery	Duration	Planned Date	Conduction Date	TM	TA	AT	Reference Book	Mapping with Outcomes CO	 PO
I.	1	Introduction to blockchain, History of blockchain	1 Hour	27/08/26		LT	CB, PPT	CA MSE ESE	A, B	BTAIC 703 _1	PO 1,2,6,9 ,11
	2	Peer-to-peer (P2P) network	1 Hour	27/08/26					A, B		
	3	Public ledger concept	1 Hour	2/09/26					A, B		

Vision:
Developing AI & DS applications that addresses regional challenges and empowering innovation and challenges, to become a leading rural AI & DS hub.
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M1: Emphasizing responsible AI development that considers social and environmental factors specific to the region.
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Unit	Lecture No.	Lesson Plan Content Delivery	Duration	Planned Date	Conduction Date	TM	TA	AT	Reference Book	Mapping with Outcomes CO	 PO
	4	Double spend problem	1 Hour	3/09/26					A, B		PSO 1,2
	5	Features of blockchain	1 Hour	3/09/26					A, B		
	6	Types of blockchain: public, private, consortium	1 Hour	8/09/26					A, B		
	7	Applications of blockchain	1 Hour	9/09/26					A, B		
II.	8	Public key cryptography	1 Hour	10/09/26		LT	CB, PPT	CA MSE ESE	A, C	**BTAIC 703 _2**	PO 1, 2,3,5,7 ,11 PSO 1,2,3
	9	Hah Function	1 Hour	10/09/26					A, C		
	10	Message Digest	1 Hour	16/09/26					A, C		
	11	Secure Hash Algorithm(SHA-256)	1 Hour	17/09/26					A, C		
	12	Digital Signature	1 Hour	17/09/26					A, C		
	13	Elliptic Curve Digital Signature Algo(ECDSA	1 Hour	22/09/26					A		
	14	Merkle Tree	1 Hour	23/09/26					A		
III.	15	Bitcoin definition, the transaction life cycle	1 Hour	24/09/26		LT	CB, PPT	CA MSE ESE	A	**BTAIC 703 _3**	PO 1,2,4,6 ,7,9,10
	16	Structure of a block, genesis block	1 Hour	24/09/26					A		
	17	Wallet	1 Hour	29/09/26					B		
	18	Bitcoin mining	1 Hour	30/09/26					B		

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	19	Forking: head fork and soft fork	1 Hour	1/10/26					B		PSO 1,2,3
	20	Consensus algorithms: Proof of Work (PoW)	1 Hour	1/10/26					B		
	21	Consensus algorithms: Proof of Stake (PoS), Practical Byzantine Fault Tolerance (PBFT)	1 Hour	13/10/26					B		
IV.	22	Consensus algorithms: Proof of Burn (PoB), Proof of Elapsed Time (PoET)	1 Hour	14/10/26			CB, PPT	CA MSE ESE	A, C	**BTAIC 703 _4**	PO 1,2,3,4 ,5,6,7, 8,10,1 1 PSO 1,2,3
	23	Introduction to Ethereum & Ether	1 Hour	15/10/26					A, C		
	24	Gas, the world state	1 Hour	15/10/26					A, C		
	25	Transactions in Ethereum	1 Hour	21/10/26					A, C		
	26	Ethereum Virtual Machine (EVM)	1 Hour	22/10/26					C		
	27	Types of accounts, block structure	1 Hour	22/10/26					C		
	28	DApps, smart contract basics (Solidity)	1 Hour	27/10/26					C		
V.	29	Ethereum vs Bitcoin	1 Hour	28/10/26		LT	CB, PPT	CA MSE	D	**BTAIC 703 _5**	PO 1,2,3,4
	30	Land Registry Records	1 Hour	29/10/26					D		

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	31	Cross-border payments over blockchain, Project Ubin	1 Hour	29/10/26				ESE	D		,5,6,7, 9,10, 11 PSO 1,2,3
	32	Food Security, Supply chain financing	1 Hour	3/11/26					D		
	33	Voting system and Identity on Blockchain	1 Hour	4/11/26					D		
	34	Supply chain management	1 Hour	5/11/26					D		
	35	Healthcare and electronic medical records	1 Hour	5/11/26					D		
	36	Blockchain and Metaverse.	1 Hour	12/11/26					D		

Note: TM-Teaching Method- Lecture (LT), Laboratory Visit (LV), Industrial Visit (IV) TA-Teaching Aids Chalk Board (CB), Power Point Presentation (PPT), Models (MD) AT- Assessment Tool–Assignments (AS), Examinations (CA, MSE, ESE), Rubrics (RB)

Mode of Assessment

Mode	Assessment Tool	Syllabus	CO Mapped	Marks Weightage	Remark
CA	"Crack the Hash": Building the Cryptographic Backbone of Blockchain	**Unit 1**	CO2	25 M	The maximum weightage shall be of 20 Marks as per University Structure
	"Mine Your Own Block" – Simulating Bitcoin's Consensus Mechanism	**Unit 2, Unit 3, Unit 4**	CO3	35 M	
	"Smart Contracts in Action" – From Code to Real-World Use Case	**Unit 5**	CO4, CO5	35 M	
MSE	Written Exam	50% of Syllabus	CO1, CO2, CO3	20M	The maximum weightage shall be of 20 Marks as per University Structure
ESE	Written Exam	On entire syllabus of Prompt Engineering (**BTAIC703**)	CO1, CO2, CO,3, CO4, CO5	60 M	The maximum weightage shall be of 60 Marks as per University Structure

Course Coordinator **Academic Coordinator** **HOD- AI & DS** **Principal**

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