AND THE OF TECHNOLOGY		GALAYA E B	National Institute of Technology Meghalaya An Institute of National Importance												CURRICULUM	
Prog	ramm	e N	Master of Computer Applications								Academic Year of Regulation			ation	2024-25	
Depa	artmen	nt Co	<u> </u>								Semester				V	
Cour	se									Credit S	tructure			Marks D	Marks Distribution	
Code			Course Name					Pre-Requisite	L	Т	Р	С	INT	MID	END	Total
CA67	11	Blockchain and its Applications							3	0	0	3	50	50	100	200
										CO's		State	ement		Bloom's	Taxonomy
		This course explains the need and working principle of blockchain systems, cryptocurrency, cryptographic primitives.								CA671.1	Able to explain the need of Blockchain system and demonstrate the fundamentals of cryptocurrency, cryptographic primitives.			Understa	Understand	
Course Objectives		This course describes the in-depth knowledge and concept of recent technologies, tools, and implementation strategies.								CA671.2	Able to demonstrate the tools, Nake consensus and demonstrate the wo principals of payment verification protocol		ne working			
	ives		ourse provid ction throug					ues of	Course Outcomes	CA671.3	Able to describe and analyse the various consensus algorithm as per the application requirements.				Analyse	
		This course provides the mechanism for the development of smart contract using solidity language for distributed applications.								CA671.4	Able to design and develop the communication model for sending and receiving the messages in transaction.			Create		
										CA671.5	Able to design, develop and analyse real time distributed real time applications.			alyse the	Create	
COs		Mapping with Program Outcomes (POs)												Мар	Mapping with PSOs	
	5	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CA671		3	3							2				3		3
CA671.2		3	3	3	1	2				1				2	3	2
CA671.3		1	2	3	3	2	2			_			_	2	3	3
CA671		1	2	3	3	3	2	3		2			1	2	3	2
CA67′		2	3	3	2	2	3	2		2			1	3	3	3
CA67	71	2.00	2.60	3.00	2.25	2.25	2.33	2.50	11.45110	1.75			1.00	2.40	3.00	2.60
NI.							0-		LLABUS					Harring		
No.	Intro	Content oduction to Blockchain Technology and its Importance									Hours 5	COs CA671.1				
·		<u> </u>										CA671.2				
"	Evolu	asic Crypto Primitives Cryptographic Hash, Digital Signature volution of the Blockchain Technology ements of a Blockchain							12	CA	40/1.2					
III		kchain Consensus Permissionless Models, Permissioned Models ort Contract Hands On – Ethereum Smart Contracts (Permissionless Model), Hyperledger Fabric (Permissioned Mode)								d Mode)	13	CA671.3, CA671.4				
IV	Block	centralized Identity Management ckchain Interoperability ckchain Applications									12	CA671.4, CA671.5				
		Total Hours												42		

Essential Readings

1. Imran Bashir, "Mastering Blockchain: A deep dive into distributed ledgers, consensus protocols, smart contracts, DApps, cryptocurrencies, Ethereum, and more", 3rd Edition, Packt Publishing, 2020, ISBN: 9781839213199, book website: https://www.packtpub.com/product/mastering-blockchain-third-edition/9781839213199

- 2. Imran Bashir, "Mastering Blockchain", 1st Edition, Packt, 2017.
- 3. Melanie Swan, "Blockchain: Blueprint for New Economy", 1st Edition, O'Reilly Media, 2015.
- 4. Sam Goundar, "Blockchain Technologies, Applications And Cryptocurrencies: Current Practice And Future Trends", 1st Edition Word Scientific, 2020

Supplementary Readings

- 1. Hyperledger Tutorials https://www.hyperledger.org/use/tutorials
- 2. Ethereum Development Resources https://ethereum.org/en/developers
- 3. Alan T. Norman, "Blockchain Technology Explained: The Ultimate Beginner's Guide About Blockchain Wallet, Mining, Bitcoin, Ethereum, Litecoin, Zcash, Monero, Ripple, Dash, IOTA and Smart Contracts", 1st Edition, 2017
- 4. Jan Veuger, "Blockchain Technology and Applications", 1st Edition, Nova Publisher, 2019
- 5. Andreas Bolfing, "Cryptographic Primitives in Blockchain Technology: A Mathematical Introduction", 1st Edition, Oxford University Press, 2020.