SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Accredited by National Board of Accreditation, AICTE, New Delhi,Accredited by NAAC with "A" Grade – 3.32 CGPA,Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

TEACHING PLAN

Course Code	CourseTitle	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
20IT6J02	Block ChainTechnology	VII	AI&ML	5	2024-25	18-11-2024

Pre-requisites: Distributed systems, cryptography, networking, data structures, and programming skills in languages like Python or JavaScript.

S.No	Course outcomes	Knowlwdge Levels
1	Discover the secure and efficient transactions with crypto-currencies	K3
2	Experiment with cryptocurrency trading and crypto exchanges	K3
3	Explain bitcoin usage and applications	K2
4	Develop private block chain environment and develop a smart contract on Ethereum	K5
5	Build the hyper ledger architecture and the consensus mechanism applied in the hyper ledger.	K3

Unit	Out Comes/ Bloom's Level	Topic No.	Topics/Activity	Text Book/ Reference	Contact Hour	Delivery Method
UNIT-I: CRYPTOCURRENCY AND BLOCKCHAIN- INTRODUCTION						
I	CO1: Discover the secure and efficient transactions with crypto-currencies (K3)	1.1	Blockchain- An Introduction, Distinction between databases and blockchain,	T1	1	Ckalk, talk
		1.2	Distributed ledger. Blockchain ecosystem -Consensus Algorithms & Types,	T1	2	Ckalk, talk
		1.3	Blockchain structure,	T1	1	Ckalk, talk
		1.4	Distributed networks- Distributed Applications (DApps)	T1	1	Ckalk, talk
		1.5	Web 3.0 - DApps	T1	1	Ckalk, talk
		1.6	Ecosystems. Working - Permissioned and permission-less Blockchain	T1	1	Ckalk, talk, PPT
		1.7	Cross Chain Technologies	T1	1	Ckalk, talk
		1.8	IOT & Blockchain - Digital Disruption in Industries – Banking,	T1	1	Ckalk, talk, PPT
		1.9	Insurance, Supply Chain,	T1	1	Ckalk, talk
		1.10	Governments, IP rights,	T1	1	Ckalk, talk
		1.11	Creation of trustless Ecosystems – Block chain as a Service	T1	1	Ckalk, talk
		1.12	Open Source Block chains	T1	1	Ckalk, talk

	Content beyond Syllabus	1.13	Quantum Blockchain - The Future of Secure Distributed Ledgers	R1	1	Ckalk, talk
Revision of cryptocurrency and blockchain Concepts					1	Ckalk, talk
				Total	15	
UNIT-II: CRYPTO CURRENCIES						
II	CO2: Experiment with cryptocurrency trading and crypto exchanges (K3)	2.1	Crypto Currencies	T1	1	Ckalk, talk
		2.2	Anonymity and Pseudonymity in Cryptocurrencies	T1	1	Ckalk, talk
		2.3	Digital Signatures	T1	1	Ckalk, talk
		2.4	Cryptocurrency Hash Codes	T1	1	Ckalk, talk
		2.5	Need for Crypto Currencies	T1	1	Ckalk, talk
		2.6	Crypto Markets	T1	1	Ckalk, talk
		2.7	Explore Crypto Currency Ecosystems	T1	1	Ckalk, talk, PPT
		2.8	ICOs –(Initial Coin Offerings)	T1	1	Ckalk, talk
		2.9	Crypto Tokens	T1	1	Ckalk, talk
		2.10	Atomic Swaps	T1	1	Ckalk, talk
		2.11	Crypto Currency Exchanges Centralised and Decentralized Crypto exchanges	T1	1	Ckalk, talk, PPT
		2.12	Regulations on Crypto Currencies & exchanges	T1	1	Ckalk, talk
		2.13	Downside of non-regulated currencies	T1	1	Ckalk, talk
		2.14	crypto Scams	T1	1	Ckalk, talk
		2.15	Exchange hacks	T1	1	Ckalk, talk
	Content beyond Syllabus	2.16	Stablecoins and the Future of Cryptocurrency Regulation	R1	1	Ckalk, talk
Revision of crypto currencies					1	Ckalk, talk
				Total	17	
UNIT-III: BITCOIN						
III	CO3: Explain bitcoin usage and applications (K2)	3.1	Bitcoin history	T2	1	Ckalk, talk
		3.2	Bitcoinusage	T2	1	Ckalk, talk
		3.3	Bitcoin storage	T2	1	Ckalk, talk
		3.4	Bitcoin Selling	T2	1	Ckalk, talk
		3.5	Bitcoin Transactions	T2	1	Ckalk, talk
		3.6	Invalid Transactions - Parameters that invalidate the transactions	T2	1	Ckalk, talk, PPT
		3.7	Scripting Language in Bitcoin	T2	1	Ckalk, talk
		3.8	Applications of Bitcoin script	T2	1	Ckalk, talk
		3.9	Nodes and network of Bitcoin	T2	1	Ckalk, talk
		3.10	Bitcoin ecosystem	T2	1	Ckalk, talk
	Content beyond Syllabus	3.11	Smart Contracts in Bitcoin and Their Integration with the Bitcoin Script	R2	1	Ckalk, talk
Revision of Bicoin					1	Ckalk, talk
				Total	12	
UNIT-IV ETHEREUM						

IV	O4: Develop private block chain environment and develop a smart contract on Ethereum (K5)	4.1	The Ethereum ecosystem, DApps and DAOs	T2	1	Ckalk, talk
		4.2	Ethereum working	T2	1	Ckalk, talk
		4.3	Solidity	T2	1	Ckalk, talk
		4.4	Contract classes, functions, and conditionals	T2	1	Ckalk, talk., PPT
		4.5	Inheritance & abstract contracts	T2	1	Ckalk, talk
		4.6	Libraries	T2	1	Ckalk, talk
		4.7	Types & optimization of Ether	T2	1	Ckalk, talk
		4.8	Global variables- Debugging	T2	1	Ckalk, talk
		4.9	Future of Ethereum	T2	1	Ckalk, talk
		4.10	Smart Contracts on Ethereum- different stages of a contract deployment	T2	1	Ckalk, talk, PPT
		4.11	Viewing Information about blocks in Blockchain	T2	1	Ckalk, talk
		4.12	Developing smart contract on private Blockchain- Deploying contract from web and console	T2	1	Ckalk, talk
	Content beyond Syllabus	4.13	Ethereum Layer 2 Solutions: Enhancing Scalability and Efficiency for DApps and Smart Contracts	R2	1	Ckalk, talk
Revision of Ethereum					1	Ckalk, talk
				Total	14	
UNIT-V HYPERLEDGER						
V	CO5: Build the hyper ledger architecture and the consensus mechanism applied in the hyper ledger. (K3)	5.1	Hyperledger Architecture	T2	1	Ckalk, talk
		5.2	Consensus- Consensus& its interaction with architectural layers	T2	1	Ckalk, talk
		5.3	Application programming interface	T2	1	Ckalk, talk
		5.4	Application model	T2	1	Ckalk, talk
		5.5	Hyperledger frameworks- Hyperledger Fabric	T2	1	Ckalk, talk
		5.6	Various ways to create Hyperledger Fabric Block chain network	T2	1	Ckalk, talk, PPT
		5.7	Creating and Deploying a business network on Hyperledger Composer Playground	T2	1	Ckalk, talk, PPT
		5.8	Testing the business network definition	T2	1	Ckalk, talk
		5.9	Transferring the commodity between the participants	T2	1	Ckalk, talk
	Content beyond Syllabus	5.10	Integration of Hyperledger Fabric with IoT for Supply Chain Management	R2	1	Ckalk, talk
Revision of Hyperledger					1	Ckalk, talk
				Total	11	
				CUMULATIVE PROPOSED PERIODS	69	

Text Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION

1	Henning Diedrich, Ethereum: Block chains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations, ISBN: 1523930470, 9781523930470 Wildfire Publishing, September 8, 2016
2	Andreas M. Antonopoulos, Mastering Bitcoin: Unlocking Digital Cryptocurrencies, 1st Edition, January 13, 2015 ,O'Reilly Media
Reference Books:	
S.No.	**AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION**
1	Daniel Drescher, Blockchain Basics: A Non-Technical Introduction, 1st Edition, Apress.2017
2	Melanie Swan, Blockchain: Blueprint for a New Economy, 1st Edition, O'Reilly Media, 2015
Web Details	
1	https://www.coursera.org/learn/ibm-blockchain-essentials-for-developers
2	https://museblockchain.com/
3	https://www.provenance.org/
4	https://www.coursera.org/learn/blockchain-basics
5	https://steemit.com/ 6. https://101blockchains.comhttps://followmyvote.com/

		Name	Signature with Date
i.	Faculty	Mr. K. Jai Prakash	
ii.	Course Coordinator	Dr. G. Sudhaker	
iii.	Module Coordinator	Mr. V. Subrahmanyam	
iv.	Programme Coordinator	Mr.B.Ramakrishna	

Principal