OUTCOMES:

On completion of the course, the students will be able to:
1. Design the right user interface for mobile application.
2. Implement mobile application using UI toolkits and frameworks.
3. Design a mobile application that is aware of the resource constraints of mobile devices.
4. Develop web based mobile application that accesses internet and location data.
5. Implement android application to use telephony for SMS communication.
6. Implement android application with multimedia support.

REFERENCES:
1. Reto Meier, "Professional Android 4 Application Development", Wiley, 2012.
2. Zigurd Mednieks, Laird Dornin, G. Blake Meike, Masumi Nakamura, "Programming Android", O'Reilly, 2011.
3. Alasdair Allan, "iPhone Programming", O'Reilly, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3	3	3	1
CO2	3	3	3	3	3	3
CO3	3	3	3	1	3	1
CO4	3	3	3	3	1	1
CO5	3	3	3	1	3	3
CO6	3	3	3	3	3	3

CP5075   CRYPTOCURRENCY AND BLOCKCHAIN TECHNOLOGIES   L T P C
3 0 0 3

OBJECTIVES:
- To study the basic concepts of crytocurrencies and blockchains.
- To explain the details of Bitcoin and its different components.
- To study the basics Hyperledger and Web3.
- To analyse the position of Web 3 and Hyperledger with different aspects of blockchain technologies.
- To differentiate between alternate blockchains and their advantages in application areas.
- To understand the Ethereum development environment and the application development process.

UNIT I   INTRODUCTION   9
Cryptographic hash functions – hash pointers – digital signatures – public keys as identities – an example cryptocurrency. Bitcoin, history of blockchain and Bitcoin – Types of Blockchain – Consensus – Decentralization.

UNIT II   BITCOIN   **9**

Bitcoin – Digital Keys and Addresses – Transactions, life cycle, data structure, types – Structure of the blockchain – Mining – Bitcoin Networks and Payments – Wallets – Alternative coins – Smart Contracts – Definition – Recardian contracts.

UNIT III   WEB3 AND HYPERLEDGER   **9**

Web 3 Contract development – POST requests – Frontend – Development framework – Hyperledger Projects – Protocol – Reference architecture – Hyperledger Fabric – Corda.

UNIT IV   ALTERNATIVE BLOCKCHAINS AND APPLICATIONS   **9**

Alternative blockchains – Applications, Internet of Things, Government, Health, Finance – Scaleability – Privacy.

UNIT V   ETHEREUM   **9**

Setting up Ethereum development tools – Solidity language. – Ethereum accounts, key pairs, working with Externally Owned Accounts (EOA), contract accounts – Smart contracts, structure, setting up and interaction, examples – Decentralised applications, implementation, case studies – Whisper protocol – Swarm architecture and concepts.

TOTAL : 45 PERIODS

OUTCOMES:

On Completion of the course, the students should be able to:
- Explain cryptocurrencies and their relationship with the blockchain technology.
- Explain the different steps in the use of Bitcoins.
- Relate Web 3 and Hyperledger to concepts in blockchain technologies.
- Apply blockchains to different real-life problems
- Implement a simple application using Ethereum.

REFERENCES:

1. Imran Bashir, "Mastering Blockchain: Distributed Ledger Technology, Decentralization, and Smart Contracts Explained", Second Edition, Packt Publishing, 2018.
2. A. Narayanan, J. Bonneau, E. Felten, A. Miller, S. Goldfeder, "Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction" Princeton University Press, 2016.
3. Arshdeep Bahga and Vijay Madisetti, "Blockchain Applications : A Hands-On Approach", 2017
4. Andreas Antonopoulos, Satoshi Nakamoto, "Mastering Bitcoin", O'Reilly Publishing, 2014.
5. Roger Wattenhofer, "The Science of the Blockchain" Create Space Independent Publishing Platform, 2016.
6. Alex Leverington, "Ethereum Programming" Packt Publishing Limited, 2017.

CO	PO						PSO		
	1	2	3	4	5	6	1	2	3
1.	√		√				√	√	
2.	√		√				√	√	
3.	√		√				√	√	
4.	√		√	√		√	√	√	√
5.	√		√	√			√	√	√