

**Savitribai Phule Pune University  
(Formerly University of Pune)**



**Department of Technology  
Board of Studies Electronics and Electrical Technology (EE)  
STRUCTURE OF ONE YEAR FULL TIME POST GRADUATE DIPLOMA IN  
BLOCKCHAIN PROJECT MANAGEMENT (PGDBPM)**

Each Trimester is of 14 weeks followed by examination in subsequent week.

**Trimester I**

Sr. No	Course Code	Course Name	Teaching Scheme			Credits
			L	T	P	
1	PGDBT 1	Blockchain Fundamentals	3	0	0	3
2	PGDBT 2	Blockchain and Core Applications	2	1	0	3
3	PGDBT 3	Cryptocurrencies and The Crypto Network.	1	1	1	3
4	PGDBT 4	Blockchain Networks	2	1	0	3
5	PGDBT 5	Blockchain Platforms	2	1	0	3
6	PGDBT 6	The Business Applications and Blockchain - Project			4	2
7	PGDBT 7	Blockchain in Enterprise - Hands on Project			4	2
TOTAL						19

**Trimester II**

Sr. No	Course Code	Course Name	Teaching Scheme			Credits
			L	T	P	
8	PGDBT 8	Regulatory and Policy Considerations of Blockchain Technology	1	2	0	3
9	PGDBT 9	Privacy and Risks in Using Blockchain Technology	1	2	0	3
10	PGDBT 10	Elective 1	2	0	0	2
11	PGDBT 11	Elective 2	2	0	0	2
12	PGDBT 12	The Business Applications and Blockchain	0	0	4	2
13	PGDBT 13	Blockchain Project Management	0	0	8	4
TOTAL						16

### Trimester III

Sr. No	Course Code	Course Name	Teaching Scheme			Credits
			L	T	P	
14	PGDBT 14	On Job Training/ Internship	0	0	0	12
TOTAL						12
<b>Total Course Credits</b>						<b>47</b>

### List of Electives

	Course Name
A	Blockchain and Digital Marketing
B	Blockchain & Supply Chain
C	Blockchain in HR
D	Blockchain and Finance

**Eligibility Criteria- Graduation in any branch of Science, Commerce, Art, Management.**

#### PGDBT 1: The Fundamentals of Blockchain & Cryptocurrencies

Contents:

- Origins of Blockchain
- Electronic Systems and Trust
- Bitcoin Predecessors
- The Bitcoin Experiment
- Bringing Bitcoin to Life
- What is Blockchain?
- Why is Blockchain a Distributed, P2P Network?
- Blockchain Vs Cryptocurrency
- Types of Blockchain
- What Are different Blockchain Technologies?
- Benefits of using Blockchain Technology
- Tokens on Ethereum Platform
- Ethereum Token Standards
- Merkle Tree and Hashing
- Blocks, Wallets and Addresses
- Public and Private Key

- Cryptography and Cryptographic Algorithms
- Transaction Execution and Distribution
- Components of Blockchain Ecosystem
- Blockchain Architecture
- Who are Miners?
- What are Smart Contracts?
- What is Consensus?
- Types of Consensus Algorithms
- Proof-Of-Capacity(PoC) & Proof-of Activity(PoA)
- Proof-of-Burn(PoB) & Proof-of-Weight(PoWeight)
- Leased Proof-of-Stake(LPOS)
- Blockchain use cases in Financial Sector
- Blockchain use cases in Business Sector
- Blockchain use cases in Government & Public Sector
- Blockchain use cases in other Industries

Books:

1. The Basics of Bitcoins and Blockchains by Anthony Lewis, Two Rivers Distribution
2. Blockchain Explained: A Pragmatic Approach by Srihari Kapu,
3. Blockchain Technology by Chandramouli Subramanian , University Press India

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### PGDBT 2: Core Applications of Blockchain

Contents:

- Gartner's Hype Curve & Evolution of Blockchain Technology
- Blockchain Need and Genesis Key
- Characteristics of Blockchain
- P2P System Cryptography, Hashing and Transactions
- Digital Signatures
- Blockchain Structure
- Mining and Consensus
- Centralization and Decentralization
- Byzantine General Problems
- Forks: soft & hard forks, Ummer blocks
- Different forks from Bitcoin Wallets, Transactions, Public & Private keys

Books:

1. Building Blocks of Blockchain by Anil Sinha, University Press
2. Blockchain Basis: The Core Concepts and Technical Foundations for Beginners by Mark ArcherPGDBT 3:  
Types of Blockchain Networks, O'Rielly

### PGDBT 3: Cryptocurrencies and The Crypto Network.

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- Introduction to Cryptocurrency
- How does Cryptocurrency work?
- What defines the price of Cryptocurrency?
- Pros and Cons of Cryptocurrency
- What is an ICO?
- Primer on Top Cryptocurrencies
- Leading ERC 20 Tokens
- What is Blockchain Mining?
- How To Mine Cryptocurrencies?
- What is Bitcoin
- Bitcoin as a Concept
- Who created it?
- Bitcoin as a Software
- Bitcoin as a Technology
- Is bitcoin Legal?
- P2P Network
- Peer Discovery
- Connecting to Peers
- Memory Pool
- Concepts of Bitcoin
- Regulations around Bitcoin
- Bitcoin for Individuals
- Bitcoin Working & its Units
- How to Buy Bitcoins
- Bitcoin Wallet
- Bitcoin Nodes
- Bitcoin Core
- Bitcoin Classic
- Bitcoin XT
- Bitcoin Unlimited
- Bitcoin Cash
- Bitcoin Block Explorer
- Bitcoin Forks
- Bitcoin Variations
- Bitcoin Trading
- Bitcoin Vocabulary

Books:

1. The Basics of Bitcoins and Blockchains: An Introduction to Cryptocurrencies and the Technology that Powers Them (Cryptography, Crypto Trading, Digital Assets, NFT) by Antony Lewis
2. Cryptocurrency for Beginners, by Vignesh B, Notion Press

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PGDBT 4: Types of Blockchain Networks

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Contents:

- Types of Blockchain Networks
- The 4 Types of Blockchain Networks
- Network Applications
- Network Challenges
- Blockchain Network Security
- How Can Blockchain Help in Cyber Security?
- Conceptualizing Blockchains - Characteristics and Applications
- How Blockchain is set to change transactions, information flow and business processes
- Which Networks to use

Books:

1. Blockchain Economics: Implications Of Distributed Ledgers - Markets, Communications Networks, And Algorithmic Reality by Frank Witte and Paolo Tasca, Standard Press
2. Blockchain Consortiums - A Comprehensive Handbook: Analyzing the Business Model of the future by Varun Singhi, Notion Press

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PGDBT 5: Types of Blockchain Platforms

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Contents:

- Hyperledger Applications and Tools
- Hyperledger Fabric Explained
- Hyperledger vs. Permission-less Blockchains
- Ethereum VS Hyperledger Fabric
- What is the difference between a cryptocurrency coin and a token?
- Hyperledger Fabric: Project

Books:

1. Matt Zand, Xun (Brian) Wu, and Mark Anthon, "Hands-on Smart Contract Development with Hyperledger Fabric V2: Building Enterprise Blockchain Applications", O'Reilly
2. Mastering Ethereum: Building Smart Contracts and DApps by Andreas M. Antonopoulos and Dr. Gavin Wood, O' Reilly

## PGDBT 5: Smart Contracts

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### Contents:

- What is a smart contract?
- Smart contracts and why they're increasing in popularity for a variety of applications
- Contract Dimensions
- Legal Considerations
- Security Challenges & Measures
- Smart contract platforms
- Smart Contract Implementation Ricardian Contracts & Smart Contracts Practice: Deploy a Smart Contract

### Books:

1. Andreas M. Antonopoulos and Gavin Wood, "Mastering Ethereum: Building Smart Contracts and DApps", O'Reilly Melanie Swan, "Blockchain: Blueprint for a New Economy", O'Reilly
2. Hands-On Smart Contract Development with Solidity and Ethereum: From Fundamentals to Deployment Paperback – 6 December 2019 by David Hoover, O' Really
3. Smart Contracts and Comparative Law: A Western Perspective by Andrea Stazi, Springer Publications

## PGDBT 6: The Business Applications and Blockchain

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### Contents:

- Use cases on a variety of blockchain applications including supply chain, healthcare, consumer, and social impact
- Learn how companies can use new technologies such as blockchain to enter new markets or turn around a flagging business
- Overview of the developing blockchain ecosystem from service providers to initial coin offerings
- Insights for entrepreneurs and investors on the market and how it's evolving
- Identifying new opportunities in the blockchain ecosystem
- Regulatory and Policy Considerations of Blockchain Technology
- Latest regulatory and policy developments and governance of blockchain in major economies
- Privacy and Risks in Using Blockchain Technology
- Risks associated with adopting new technologies such as blockchain, including hacking
- Privacy considerations around the blockchain
- Future of Blockchain Technology
- Trends to keep your eye on
- Ways to apply these emerging technologies to your organization through a final capstone project

### Books:

1. Enterprise Blockchain: A Definitive Handbook by Navveen Balani and Rajeev Hathi
2. The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology by Vitalik Buterin and William Mougayar, Wiley

3. Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World by Don Tapscott and Alex Tapscott, Penguin Publishers

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#### PGDBT 7: Blockchain Use Cases

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##### Contents:

- Blockchain Use Cases across industries Project
  - Automobile
  - Manufacturing
  - Renewable Energy
  - Supply Chain
  - Utilities
  - Agriculture
  - Logistics
  - Hospitality
  - Construction
  - Civil Engineering
- Blockchain convergence with multiple technologies
  - Blockchain with Artificial Intelligence
  - Blockchain and IoT
  - Blockchain and Cloud Computing
  - Blockchain and Machine Learning
  - Blockchain Cloud Computing
  - Blockchain and Cyber Security

##### Books:

1. Industry Use Cases on Blockchain Technology Applications in IoT and the Financial Sector Paperback – Import, 2 March 2021 by Zaigham Mahmood, Business Science Reference
2. Blockchain Applied: Practical Technology and Use Cases of Enterprise Blockchain for the Real World by Stephen Ashurst , Stefano Tempesta, Routledge

Trimester II

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#### PGDBT 8: Regulatory and Policy Considerations of Blockchain Technology

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##### Contents:

- Latest regulatory and policy developments and governance of blockchain in major economies
- Smart contracts and why they're increasing in popularity for a variety of applications
- What is a smart contract?
- Smart contracts and why they're increasing in popularity for a variety of applications
- Contract Dimensions
- Legal Considerations
- Security Challenges & Measures
- Smart contract platforms

- Smart Contract Implementation Ricardian Contracts & Smart Contracts Practice: Deploy a Smart Contract

Books:

1. Blockchain, Law and Governance by Benedetta Cappiello and Gherardo Carullo, Springer
2. Legal Tech, Smart Contracts and Blockchain (Perspectives in Law, Business and Innovation) by Marcelo Corrales, Springer

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#### PGDBT 9: Privacy and Risks in Using Blockchain Technology

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Contents:

- Risks associated with adopting new technologies such as blockchain, including hacking
- Privacy considerations around the blockchain
- Blockchain and Cryptocurrency Regulation
- Blockchain Regulation
- Advantages and Challenges to Overcome when Integrating Blockchain Technology
- Second-level Transport System
- Routes to Blockchain Integration
- Privacy considerations around the blockchain

Books:

1. Blockchain Technology: Concepts and Applications by Kumar Saurabh and Ashutosh Saxena, Wiley
2. Blockchain Technology by Chandramouli Subramanian, Universities Press (India) Pvt. Ltd.

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#### PGDBT 10: Elective: Blockchain & Digital Marketing

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Contents:

- Functional Overview of Digital Marketing
- Digital Marketing Overview
- Search Engine Optimization
- Social Media Marketing
- Content Marketing
- Online Advertising
- Email Marketing
- Web Analytics
- How Digital Marketing will benefit from Blockchain
- Eliminating Digital Marketing Middleman.
- Building Trust & Transparency.
- Customers having full control of their information.
- Benefits of Branding
- Provide Security
- Use of Smart Contracts



- Limitations of the current Digital Marketing Model
- Introduction
- Eliminating Online Ad Fraud
- The link between Advertiser and Ad Publisher

Books:

1. Blockchain Technology and Applications for Digital Marketing by Rohit Bansal, Pacha Malyadri, IGI Global
2. Fundamentals of Digital Marketing by Puneet Bhatia, Pearson

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#### PGDBT 10: Blockchain & Supply Chain

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Contents:

- What is Supply chain?
- Introduction to Supply Chain Management?
- How Supply Chain Management works?
- Traditional Supply Chain Management
- Supply Chain Management & Blockchain Integration Overview
- Supply Chain Management Traditional Architecture
- Supply Chain Management Blockchain Architecture
- Blockchain Deployment Stages
- Use case – Food Industry
- Use case – Pharmaceuticals
- Use case – Automobile Industry
- Real World Case Study (IBM/Walmart and VeChain)

Books:

1. Blockchain and the Supply Chain: Concepts, Strategies and Practical Applications by Nick Vyas, Kogan Page Publishing
2. Supply Chain Revolution: How Blockchain Technology Is Transforming the Global Flow of Assets by Don Tapscott, Barlow Publishing

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#### PGDBT 10: Elective: Blockchain in HR

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Contents:

- What is Human Resource?
- What is Human Resource Management?
- Scope & Objectives of Human Resource Management.
- Functions of Human Resource Management.
- Advantages & Disadvantages of Human Resource.
- Importance of Human Resource.
- Human Resource SWOT Analysis.

- Human Resource Management Process.
- Problem Statements.
- Market's Current Scenario.
- Fake Market.
- Implementation.
- Trust of Security
- Concept
- Blockchain's Impact on Human Resource
- Transparent Work & Education Histories.
- International Payroll
- Enforcing Compliance via Smart Contracts.
- Transparent Audits.
- Automating Taxation Process.
- Paying Independent Contractors.
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Books:

1. Fundamentals of Human Resource Management by Raymond A. Noe, McGraw Hill

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#### PGDBT 10: Blockchain and Finance

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Contents:

- Finance in the Economic world
- Overview of Financial Management
- Challenges in Financial system
- How Blockchain change current Face of Financing
- Blockchain in Financial System
- Vendor Perspective about Blockchain in Financial Services
- Advantages of blockchain in Financial Services
- Cross Border Payments
- Syndicate Lending
- Digital Identity Verification
- Trade Finance
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Books:

1. Digital Finance: Security Tokens and Unlocking the Real Potential of Blockchain by Baxter Hines, Wiley

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#### PGDBT 12: The Business Applications and Blockchain

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Contents:

- Use cases on a variety of blockchain applications including supply chain, healthcare, consumer, and social impact
- Learn how companies can use new technologies such as blockchain to enter new markets or turn around a flagging business
- Overview of the developing blockchain ecosystem from service providers to initial coin offerings
- Insights for entrepreneurs and investors on the market and how it's evolving
- Identifying new opportunities in the blockchain ecosystem
- Regulatory and Policy Considerations of Blockchain Technology
- Latest regulatory and policy developments and governance of blockchain in major economies
- Privacy and Risks in Using Blockchain Technology
- Risks associated with adopting new technologies such as blockchain, including hacking
- Future of Blockchain Technology
- Trends to keep your eye on
- Ways to apply these emerging technologies to your organization through a final capstone project

Books:

1. The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology by Vitalik Buterin and William Mougayar , Wiley
2. Blockchain for Business 2019: A user-friendly introduction to blockchain technology and its business applications by Peter Lipovyanov, Packt

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### PGDBT 13: Blockchain Project Management

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Contents:

- Explain what Project Management is
- Explain the steps in the Project Life Cycle and the value / purpose of each one
- Explain how a project gets started
- Perform the steps required to determine the Critical Path for a project
- Explain Project Management in the context of business
- Define the components of the Success Triangle
- Explain the terms (common) used in Project Management
- Determine strategies for involving and engaging Stakeholders
- Determine the true cost and effort that a project takes for it to be successful
- Determine what approach to use for calculating a budget
- Apply a strategy / process to ensure you have the skills require to be successful
- Determine what work needs to be done to be successful
- Identify and plan for Impacts to your project (Risk Management)
- Utilize templates to assist you in documenting a project
- Explain the purpose and value of including Lessons Learned in your project
- Take an active role in the management of Projec
- Fetch Configuration Block & Add New Organisation Definition File
- Compute Update using Configtxlator Tool using Original & Modified Block
- Sign & Send Updated Configuration Block to Orderer

- Run Org3 Services, Join Channel & Verify Data
- Introduction: Add New Organisation in Existing consortium
- Add New Organisation in system Channel (Consortium) Flow
- Try To Create Channel when Org is not Part Of Consortium
- System Channel Update – Consortium Info Update
- Create Channel and Join all Peers- After Updating Consortium with New Org
- Deploy Chaincode, Invoke Transaction and Verify data in State DB
- Add New Orderer in Existing Fabric Network – Flow Diagram
- Create All Certificates using Certificate Authority for whole Fabric Network
- Create Cryptomaterials For New Orderer

**Books:**

1. Integrating Blockchain Technology in Project Life Cycle for efficient Project Management by Luxmi Kanth Navaneethan, Springer
2. Project Management Essentials 4th Edition: by Kalpesh Ashar, Vibrant Publishers