



Program Description Document Template

Course Name	Introduction to Blockchain & Cryptocurrency
Course Name as on Certificate	Introduction to Blockchain & Cryptocurrency
Certificate Type	Certificate of Completion by IIT-MADRAS
Certificate Issued by	IIT Madras & Pixeltests
Course Objectives	<ol style="list-style-type: none"> 1. To provide an overview of Blockchain & Cryptocurrency 2. Understand how Bitcoin Ecosystem works, Hash functions, their payoff chart and how these can be used while investing 3. Understand the basics of Public Key Cryptosystem 4. Learn about Digital Signatures (DSS), Keys, Bitcoin nodes 5. Master wallets, Elliptic Curve Cryptography 6. Thoroughly complete lab modules & projects for the above mentioned &
Eligibility	A bachelor's degree from a recognised Indian university or students pursuing graduation A passionate mind, learn cutting edge technologies to master Blockchain
Pre Requisites	Basic understanding of programming, math (Bonus: Computer Science, IT)
Target Segment	<ul style="list-style-type: none"> • Professionals looking to transition to Blockchain developer careers • Entrepreneurs seeking to create Blockchain startups • Working Professionals in Technology, Computer Science, IT • Officers keen to leverage Blockchain in their functions • Students • Venture Capitalists & Angel Investors, traders looking to have a thorough understanding of Blockchain to create a formidable thesis
Course Content	See Enclosed Programme details – as Annexure 1
Pedagogy	<ul style="list-style-type: none"> • The Primary method of instruction will be through Online Video Classes. • Participants can access the courses via Desktop / Laptop / Smart phone. • The lectures and content are created by previous Faculty of IIT-Madras/IISc, Eminent Trainers & Well known academicians who are quite experienced. • This programme is a Compilation of Video Lectures, Mock Tests, Quiz, Group Discussions and Case Studies.
Assessment	The students can assess their learning by undertaking Mock Tests, Quiz and Case Studies.
Programme Faculty	Programme Lead Faculty is Prof. Pandurangan Chair IISc, IIT-M Computer Science Department 20 years of experience in Teaching
Duration	Weeks: 8 Hours: 80 (30 hours of theory, 30 hours of lab, rest student independent learning)
Class Schedule	Weekends 6 pm (3 hours) [22/Jan/2022 for 8 weeks]
Programme Highlights/USPs	<p>Students will have to complete the programme within the stipulated time days after registering for the course.</p> <p>On successful completion of the programme, you will have a good understanding of</p> <ul style="list-style-type: none"> • In detail learning of Blockchain • Understand how Bitcoin ecosystem works • Know about hash functions • Learn about concepts like Cryptography <p>Other Highlights:</p> <ul style="list-style-type: none"> • Opportunity to earn a Certificate from IIT Madras. • Lectures imparted by Eminent Academicians and practicing Industry Experts.



	<ul style="list-style-type: none">• Fully Online Pre-Recorded Course with online lectures that provides a “real” classroom experience in a “virtual” environment.• Seamless technology that can transmit lecture videos effectively at home broadband connection of 512 kbps.• User friendly and easy to use technology interface. No expensive and time consuming software/hardware installations required at your end.• Through our web portal, Students are provided access to course presentations, case studies, assignments and other reference materials as applicable for specified courses• Learn from Anywhere – No need to travel to an institute or training centre. Learning continues even if you are traveling or not available at any specific location. You may also learn from the comfort of your home at your convenient time.		
Total Fees		Total Fees (Rs.)	
	Total Programme Fee	Rs 59,000/- (Inclusive of GST)	



ANNEXURE 1

Proposed Course outline / programme / plan - Week wise or module wise syllabus details.

Chapter	Modules (Introduction to Cryptocurrency & Blockchain Technology)
Module 0	Orientation & Mixer
Module 1 & 2	Financial Systems, Traditional Currency & Centralized Banking Systems (2008 crisis) Cardinal canons of Cryptocurrency: Decentralization E-Cash, Hashing, Byzantine agreement, Consensus protocols, Blockchain
Module 3	Cryptography Basics: Hashing, Public Key Cryptosystem Compression functions, SHA, RIPEMD families Digital Signatures (DSS); Elliptic curves, Message authentication and integrity
Lab	Public Key Cryptosystem, Cryptography
Module 4	Bitcoin Ecosystem Bitcoin peer-to-peer Network, Wallet, address, Transactions, Blocks, Mining and proof of work for consensus, Blockchain, Testnets Keys, Bitcoin nodes
Lab	Workshop on identifying 5 use cases; Business perspective Office Hours Keys, Wallets, Bitcoin nodes
Module 5	Transactions in more detail, outputs and inputs Blocks Blockchains Practice on Testnet Transaction scripts and components, Pay-to-public key-Hash (P2PKH), Multisignature, Pay-to-script Hash (P2SH)
Lab	Blockchains (Preceding module)
Module 6	Bitcoin Network revisited: Node types and roles, SVP nodes and bloom filters, transaction pool, network discovery and full nodes
Lab	Blockchains (Preceding module)
Module 7	Blocks: Structure of a block, header, identifier Merkle trees, chaining blocks to form a blockchain
Lab	Blockchains (Preceding module)
Module 8	Mining and consensus: Bitcoin economics and currency creation, coinbase transaction
Lab	Blockchains (Preceding module) Proof of work, difficulty adjustments, consensus rules, Hard and Soft Forks
Lab	Blockchains (Preceding module)
Module 9	Bitcoin security and Blockchain applications Recent directions and developments
Lab	Project Showcase1
Lab	Project Showcase2